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DEPARTMENT OF ACCOUNTANCY

EVALUATING THE IMPACT OF ARTIFICIAL INTELLIGENCE ON AUDIT QUALITY AND THE WORK OF EXTERNAL AUDITORS IN HARARE. STUDY OF DELOITTE AND TOUCHÉ ZIMBABWE

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DEDICATION

This research is dedicated to the Almighty Lord for making this possible and giving me the much-needed strength and courage to complete this dissertation.

To my own mother as well as Mr. and Mrs. Chimanga, the love and support given is greatly appreciated.

God bless you!

ABSTRACT

This research aimed to evaluate the impact of AI on audit quality and the work of external auditors in Harare, a case study of Deloitte and Touché Zimbabwe(sited in Harare). The functions of auditing have been advanced through the use of technology from the usage of pen and papers to the vast usage of advanced technologies. The objectives of this study were to determine the relationship between AI and audit quality and the work of external auditors, the impact of AI on work efficiency and effectiveness and also on audit quality, how AI-associated procedures impact material misstatements detection as well as assessing audit risks and to identify auditors' skills and knowledge requirements in an AI-based audit environment. The research employed a mixed research approach by collecting data through questionnaires under quantitative approach and conducting interviews, examining past articles, journals and the firm's website under qualitative approach. 42 participants were the target population consisting entry-level auditors, middle-level auditors, audit associates, managers and partners and, 38 participants were the sample size determined by Yamani formular. The collected data was analyzed using SPSS version 20.0 and presented using bar graphs, pie charts and tables. Multivariate regression analysis was conducted to determine the relationship between AI and audit quality as well as the work of external auditors. The research findings were that AI has a positive impact on audit quality and the work of external auditors due to its capabilities of automating repetitive tasks, extract relevant data, identifying anomalies and carrying out audit procedures effectively and efficiently. The research recommends that for auditors and local based auditing firms to enjoy these benefits are encouraged to acquire new set of skills and knowledge which includes effective communication, critical thinking, technical skills and decision making.

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ABBEVIATIONS

AI	Artificial Intelligence
APC	Assessment of Professional Competence
CA	Chartered Accountants
GAAPs	Generally Accepted Accounting Principles
GRAPA	Guided Risk Assessment Personal Assistant
ICAEW	Institute of Chartered Accountants in England and Wales
ITC	Initial Test of Competence
ISA	International Standards in Auditing
NLP	Natural Language Processing

CHAPTER I

INTRODUCTION

1.1 Introduction

The role of this study is to have a deep understanding on the impact of AI on the audit quality and work of external auditors in Harare, Deloitte & Touché Zimbabwe(Harare) being the case study. It focuses on examining the opportunities and challenges brought by AI in the auditing industry. In this chapter, an overview of the study is provided and it include the research objectives, research questions, significance of the study, assumptions, limitations as well as delimitations.

1.2 Background of the study

Several researchers and authors have viewed AI as the future of most professions such as auditing, accounting, marketing and even the health sector. Accounting, human resources and other business functions are ready to implement AI in their operation processes (Gass,2018). Munoko (2021) reported that during the CO-VID 19 pandemic, most companies gave an appreciation of using digital technologies and this has proven that indeed AI is the future and is likely to give rise to digital economies around the globe. Accounting for the past years is moving from the traditional ways of financial statement preparation and reporting to automation. With rapid advances being made in technology, accounting procedures have shifted from using paper and pencils to typewriters, calculators and eventually spreadsheets and accounting software (Kee,1993). There is a large usage of technology as transactions are done through accounting software packages such as SAGE Pastel, SAP and many others which require minimum human efforts. This has given rise to the use of AI in auditing work as all the data under audit has now been automated.

At the end of an auditing process, an independent opinion has to be formed basing on the audit evidence obtained from the audited financial statements. ISA 500 requires that for an opinion to be formed, sufficient and appropriate evidence must have been obtained. External auditors are expected to make use of AI tools to obtain evidence on automated financial statements. Munoko (2021) informed that some of the big auditing firms Deloitte and Ernst & Young started using NLP for reviewing documents which in the past took weeks if done manually. James (2023) describe AI as a game changer as it can change the auditing process.

The usage of AI in the work of external auditors has been on the rise recently after being lowly appreciated in the past and many researchers found that the application of AI in audit work has its impact that is both negative and positive. Kokina and Davenport(2017) state that the impact of AI on the work and quality of audits is expected to be substantial due to data availability and the power to process. Many authors prove that audit quality improvement lies with the proper application of AI in audit process. Castelo, Branco, Cruz-Jesus and Oliveira (2019) argued that even though the issue of audit quality and assurance is complex and subjective in nature, the epic failing of large corporations like Enron and World com which took place with auditors being involved are transparent signs of deep-rooted unethical behavior amongst auditors in degrading the quality of audit work.

Compared to the traditional ways of conducting audits, the use of AI has recently increased the ability of external auditors to detect and predict fraud as well as errors. Rashid *et al,* (2012) documented that the application of AI is beneficial in supporting the auditor's opinion. Liao *et al* (2023) reported that through the use of AI in auditing, results are provided in a very timely manner. Kambia-Cabandia (2010) further state that audit process efficiency is improved as AI tools has the ability of sending signals to the external auditor on areas that may contain material information that might have been overlooked when conducting additional tests on the financial statements. The use of AI and ML improves audit efficiency. Munoko(2021) posited that it also reduces human errors as well as reduction in costs.

Bender and Koller (2017) indicated that the implementation of AI doesn't happen overnight but takes a lot of time and requires a deep understanding of the tools in order to ensure efficiency. Alles (2015) suggested that the data must be arranged in an orderly matter before usage as it comes in many ways and if incorrect data is used in auditing the financial statements of a client, audit assurance is affected.

Deloitte & Touché Zimbabwe is one of the Harare based auditing firm that has recently adopted the use of AI in their processes in response to its increased client base and with the need to improve the auditing process with quality maximization as the main goal. Deloitte and Touché Zimbabwe external auditors are carrying out audits by fully utilizing cloud-based technologies, technology-based analytics as well as AI. According to the website of Deloitte, the firm reported that professional excellence is one of the major influences on enhancing audit quality consistency. It then further elaborated that their multidisciplinary model has been a major influence on high audit quality. The knowledge of an auditor plays an important role in determining the level of risk and strategies. However, the group recently developed a smart personal assistant that is there to support auditors with its pool of expertise. It is reported that Van Gool's team developed an AI tool named Guided Risk Assessment Personal Assistant (GRAPA) to enhance audit effectiveness and audit quality and by 2019 was of use. GRAPA's purpose is to assist in choosing the appropriate risk strategy against other strategies that have been implemented before. After all these developments and investments by the audit firm, it is therefore of deep curiosity that the researcher carries out this research to gain knowledge on how AI application has an impact audit quality and the work of external auditors in Harare.

1.3 Statement of the problem

All stakeholders of a business rely on the external auditor's report and opinion for decision making hence this gives the need for external auditors to apply proper technological tools to ensure audit effectiveness and audit quality. The technological tools in this research are AI tools. Although researches have been conducted before, no transparent relationship is shown between AI

application on audits and the work of external auditors as well as audit quality Mpofu(2023). The results on whether the application of AI is helpful in attaining audit quality and in increasing auditors' work efficiency and effectiveness has remain mixed. There is need to determine whether the application of AI by external auditors has an impact on audit quality and their work or not. This research is carried out in trying to fill in this gap.

1.4 Research objectives

The aim of this study is to have a clear view on the impact imposed by the application of AI in auditing by external auditors on their work and audit quality in Harare, Deloitte & Touché Zimbabwe sited in Harare as the case of study. The research objectives are as follows;

i. To determine the relationship between AI and audit quality and the work of external auditors.
ii. To assess the impact of applying AI on the work efficiency and effectiveness of external auditors.
iii. To investigate the effects imposed by AI on audit quality and factors leading to these effects.
iv. To determine how AI-associated procedures impact material misstatement detection and audit risk assessment.
v. To identify auditors' skills and competencies requirements that are needed when conducting audits in an AI-based environment and how audit firms can cope with these requirements.

1.5 Research questions

i. What is the relationship between AI and audit quality and the work of external auditors?

ii. How does the usage of AI impact external auditors' work efficiency as well as effectiveness?
iii. What are the effects of applying AI on audit quality and the key components leading to this relationship?
iv. How are assessment of audit risk and material misstatement detection affected by AI-related audit processes?
v. What are the implications of AI concerning external auditors' competencies and skills and how do audit firms cope with these changes?

1.6 Significance of the study

1.6.1 To the university

This study will be useful to the university for future referencing and may be used by the future researchers as part of their studies and knowledge enhancement.

1.6.2 To the student

This research enables the researcher to have a deep appreciation for the impact of AI on audit quality and the work of external auditors in Harare. Whilst fulfilling the requirements of the degree study, it also enhances the researcher's knowledge on AI as well as auditing processes and procedures.

1.6.3 To the stakeholders of the client

The users of any company's audited financial statements rely on the auditor's opinion to make decisions as they believe that they confirm the true and fair view of a business hence the work and quality of external auditors is important. Such stakeholders include investors, employees, customers, creditors and the management. It is therefore important to ensure that the privileges of

using AI on audit quality and the work of external auditors are maximized at the same time minimizing its limitations as the above-listed stakeholders make decisions with reference to the audit opinion formed basing on AI gathered audit evidence. Investors as the owners are always concerned about the going concern of the business and need assurance from the external auditors that they investments are in safe hands(managers). The company's management also use the audit evidence to make strategic business plans and strengthen its internal control. Banks and lenders also rely on the opinion so that they don't make their investments on a business that is about to fail.

1.6.4 To Auditing firms

This research will be useful to auditing firms based in Harare and countrywide to see measurable results on the implications of AI integration in ensuring audit quality and work effectiveness. This can also help in designing more advanced AI tools and planning strategies that in the future will minimize the negative impact of using an improperly designed AI tool when auditing.

1.7 Research assumptions

The study on the impact of AI on audit quality and the work of external auditors in Harare, Deloitte and Touché Zimbabwe being the case study is guided by the below listed assumptions.

i. The selected sample used to conduct this research is assumed to show a clear reflection of the whole population that is taken into consideration.
ii. The researcher assumes that only appropriate, complete and true information is given in conducting this research.
iii. The methods used in data collection are the most appropriate to view the appropriateness of this study.

iv. The results are bias-free and therefore reflects a true view of the impact of AI on audit quality and the work of external auditors in Harare.

1.8 Study delimitations

i. The population of this study is only limited to external auditors (Deloitte and Touché Zimbabwe).
ii. The research is only limited to one auditing firm sited in Harare before the dissolution phase.
iii. The auditing plans and opinions given to the firm's client from when they started carrying out AI-based audits that is a period of 2019 to 2023 are used to see the impact of AI on audit quality and the auditors' work.

1.9 Limitations of the research

- Due to an unforeseen dissolution phase of Deloitte and Touché Zimbabwe during the research period, there was limited access to data and personnel.
- The ability to collect additional data and conduct more interviews and observations is limited further limiting the depth of the research on impact of AI.
- Response rate was lower than anticipated.
- The respondents were economical with the truth.

1.10 Definition of key terms

Key terms used in this study are defined on this section

Artificial intelligence in this research, AI is referred to as an academic field of study which deals mainly with the technical know-how on creating computers and computer software that are capable of intelligent behavior or the study of programming computers to do things better and more accurately than humans (McCarthy *et al*, 1955)

External auditor is defined as an independent public accountant whose duty is to review the client's financial statements to confirm if they are presented in accordance to the international standards and reflecting a true and fair position of the company (Drogalas, 2019)

Audit quality the ability of an audit to discover weaknesses in the client's internal control system and make recommendations to address or limit them. (De Angelo, 1981).

Audit work procedures carried out by auditors to check the authenticity of the financial statements prepared by the accountants of the client's company(Dicksee, 1905)

1.11 Chapter Summary

This research examines the impact of AI on the audit quality and the work of external auditors in Harare, Deloitte and Touché Zimbabwe being the case of the study. An overview of this research is given in this chapter which includes the introduction, background, research problem, research objectives, research questions, scope, its significances as well as the delimitations. The statement of the problem highlights the motive behind embarking on this research. The background of this research gives a brief summary on the factors that led to the application of artificial intelligence in the work of auditors globally and its impact on audit quality and the work of external auditors.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

Machi and McEvoy (2016) define literature review as a summary or an overview of previously published academic research on a certain topic to enhance a deep understanding of the subject matter. This chapter therefore gives the past published literature in relation to the study topic guided by the objectives of the research. A theoretical framework of the research is given in this chapter. An overview of how audit quality and the work of external auditors are affected by the application of AI is explained in this chapter. Some of the key areas reviewed by the literature in this chapter are how external auditors are using AI to detect material misstatements and assess audit risks.

2.2 Audit Quality

Audit quality is essential when auditing and in order to attain high quality audits, there must be proper and strong interaction between data input, processing and output. De Angelo (1981) defines audit quality as the auditors' ability to detect any form of fraud or error within the financial statements of a client. An auditor is expected by ethics to confirm if the client's financial statements are free from material misstatements or not. Deloitte and Touché Zimbabwe has one of its core values as a commitment to continuously investment in technologies that make it easier to deliver audit quality and value to their clients.

Agur, Peria and Rochon (2020) postulate that audit quality is mainly based on the auditors and the users of the financial statements' opinion and how deeply its context is interpreted. However,

Alawaqleh and Almasria (2021) argued that many factors including audit tenure, auditor independence, audit fees, size of the audit firm, audit experience and other factors have a direct influence to audit quality. IAASB(2014) documented that there are three fundamental aspects that leads to audit quality which are grouped into data inputs, process and output.

The skills and knowledge of an auditor when carrying out an audit procedure are key to audit quality maximization as it implies that the auditor will be capable of assessing risks and also detect material misstatements within the financial statements using any given time (IAASB, 2014). Nwakaego and Ikechukwu(2015) reported that integrating AI in audit processes and procedures gives an assurance that audit quality is likely to be achieved.

IAASB(2014) regarded independence of the audit team as essential in aiming to maximize audit quality. Auditor's independence is vital in positioning the level of audit quality established by an auditor. The level of bias is influenced by how independent the auditor is when carrying out audit procedures. AI-based audits have a vital influence on the independence of the auditor as the machines used report only the true aspects of transactions rather than partially done or misstated (Alsharif, 2019). All in all, audit quality is directly affected by the level of the auditor's independence.

Auditors are encouraged to properly use technologies such as AI and machine learning in order to attain audit quality (IAASB, 2014). These innovative technologies must be applied properly so that the engagement team as well as the audit firm enjoys the benefits of using them. There is a reduction in the resources utilized, audit fees and time taken to complete an audit when AI is applied. If not applied properly, these AI auditing systems lead to the introduction of inherent risks (Ahmed, 2022).

Recognized as an essential drive capable of making an improvement on audit quality is AI. AI has a positive effect on audit quality as well as an influence to audit quality(Moll and Yigitbasioglu,

2019; Adeoye *et al*, 2023; Yebi and Cudjoe, 2022). Audit quality is important as it enables auditing firms to earn public trust on the other hand enables the client to allure and boost investors' confidence through its accounts hence must be one of the most important areas audit firms has to concentrate on. All the AI tools used by firms for instance GRAPA by Deloitte Zimbabwe has to be modified and modelled in such a way that audit quality is maintained throughout the auditing process.

2.3 Artificial intelligence

Etheridge and Sriram (2000) state that the implementation of AI in auditing and financial reporting began in the late 1980s and the early years of the 1990s. McCarthy *et al,* (1995) defines AI as when machines imitate the human brain that is the machines are stored with a database that enables them to identify problems, analyze them and solve them just like how we humans do it. In addition, they are viewed as non-natural or simply man-made tools that only can mimic the patterns and behaviors of their makers. Bender and Koller (2017) describe AI investment as the creation of the world's rarest intelligence done by robotics and as well as machinery.

There are four common components of AI utilized in carrying out audits. Sullivan and Hannis (2017) documented that AI-based audits are conducted using robotics, NLP, neural networks and genetic algorithms. Robotics can learn any sort of patterns, solve problems more accurately and produce reports timely. NLP is the communication element of AI and has the ability of sending signals and messages utilizing natural languages through intelligent systems (Sullivan and Hannis, 2017). The interconnectivity of a system is what best describe genetic algorithms (Odoh *et al*.,2018) and it operate as a mathematical algorithm program that search for a solution to a specific problem. Sullivan and Hannis (2017)reported that neural networks enable machines to imitate human brains in terms of performing duties assigned.

At large AI has been for the past years reported to be a perfect replica of certain human features, intelligence and behaviors. This is beneficial to many accountants and auditors as it minimizes the time taken to complete all related tasks as some of the tasks are easily automated. The application of AI allows the machines to carry out audit-related tasks by copying the human intelligence. According to Wyrobek (2020), some firms worldwide has been implementing AI in carrying out account examinations as way of maximizing the benefits of applying AI in auditing. Moron (2023) reported that information is offered at a much faster rate with AI as compared to the human capacity and this is due to its ability to consistently analyze and interpret the accounting data.

AI has been trained to produce accurate outcomes that is developers has channeled their energy and heavily invested in enabling AI technologies to follow precisely the rules of accounting. AI increases an auditor's ability to accurately complete complex auditing work at the same time improving audit quality. Through the use of AI in auditing, the external auditors can now capture large amounts of data and information while also being able to analyze data formats. Patel (2023) posited that AI application enables auditors to perform various audit functions such as detecting material misstatements, detecting risks and real-time analysis thus increasing the level of audit efficiency.

Byrnes *et al,* (2016) discovered two AI mode in auditing namely confirmatory and exploratory. Under their studies, exploratory audits are processes where the client's business and its operations undergo a complete survey as well as risk assessment phase. At the planning stage of an audit where the auditor is expected to design audit procedures, identify audit risks and carry risk assessment procedures as a way of gaining an understanding on the client's business, an exploratory mode of AI is implemented. Byrnes *et al,* (2016) viewed confirmatory audits as procedures taken by the auditor to gather evidence that is sufficient and appropriate usually done at the last phase of an audit process. This is when the auditor seeks to prove whether or not the financial statements are prepared per GAAPs and are free from any material misstatements.

2.4 Theoretical Models

2.4.1 Attribution Theory

This theory describes the effects of analyzing the behavioral motives of individuals. An insight on people's expectations on their current performance is given. The theory state that individual's current performance is linked and also influenced by their past failures or successes. Several scholars documented that it is essential to understand auditors' behaviors when auditing up to the point where the audit report is issued. A wise response to the available information utilized in the methods of auditing by the auditor gives a guarantee on audit quality. Francis (2017) posited that sometimes when implementing an audit program, auditors can lower the quality of an audit and is commonly referred to dysfunctional conduct. Jaffar (2017) documented that with this theory an overview of how auditors can use their skills and knowledge to assess risk is specified. Attribution theory shows the auditors' ability to notice misstatements. In most instances, success is granted on a procedure if the auditor accredits his past failure to bad luck compared to the one who accredits past failures to incompetence. The underlying point on this theory is that the auditors' capacity to evaluate risk is essential because procedures performed and the quantity of evidence is affected by it.

2.4.2 Predictive analysis and decision support model

It is viewed as one of the important models that is of help to humans in terms of making much better decisions. Loukidesi (2021) regarded predictive analysis as an important element of business. Walch (2019) explained that predictive analysis and decision support model patterns make use of machine learning as well as other cognitive approaches to learn how existing and past data can be used to predict the future trends on which human decisions are based. Predictions of focus include identification of matched data, failure prediction, data future value prediction as well as the selection of the best fit. Dean and Sanjay (2018) reported that there are numerous predictive tools used today namely SAP HANA, SAS as well as SPSS. Dean and Sanjay(2018) further

elaborated that business-wise there are also several predictive analytics applications which are market analysis, risk assessment and sales forecasting.

Figure 2.1: Predictive analysis

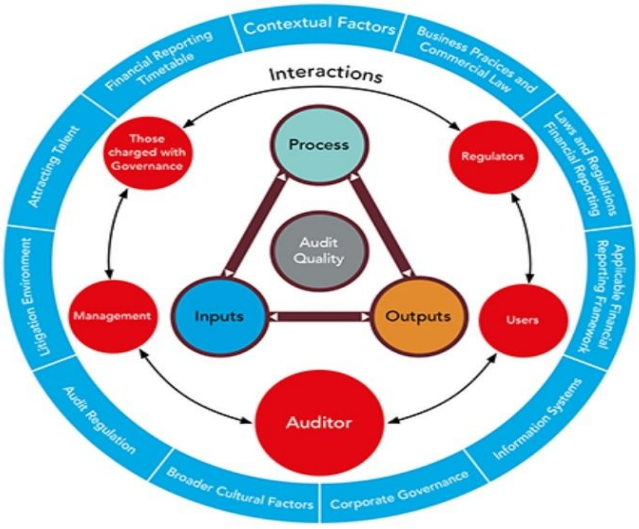
Source : Wach (2021)

AI makes the auditing process a year-round process and this helps in the identification of potential risks and designing of strategies earlier. Bank confirmation, testing of journal entries as well as analytical procedures are all now automated leaving the auditor with more time to give focus on high fraud risk areas of the client's financial statements. Dean and Sanjay(2018) posited that automation of audit procedures helps in analytical procedures improvement; identification of new risks and formulation of new audit evidence forms.

2.4.3 International auditing and assurance standard board (IAASB) Framework for audit quality

The board introduced an audit quality framework which outlines key components which contributes to audit quality. IAASB (2014) emphasize that these components act as a guide to audit work and include input, processes, output, interactions as well as contextual factors.

Figure 2.2 Framework for audit quality



Source : IAASB framework (2014)

IAASB(2014) documented that at the input elements professional skepticism, auditors' independence, professional competence, ethics and values are the prerequisites to conduct audit work effectively and ensure audit quality. The conditions of an audit performance, key stakeholders' interactivity and outputs all influences audit quality inputs.

IAASB(2014)emphasize that at the processing stage, technologies that do not breach the standards and procedures must be used in order to maximize audit quality. The framework state that the controls put in place must be in line with the standards, laws as well as regulations. Audit processes also need to be in line with the standards so that they can assess the client's business as well as plan the audit well.

Lastly, the output element consists of two vital reports namely the auditors' report and management report. Users of the financial statements' decisions depends on the audit report hence must always reflect the business at its true and fair form. Audit reports can be useful in enabling

the managers to have a deeper understanding of what is implied by audit quality that is the weaknesses spotted within the company are detailed in the reports by audit regulators. These reports can show a direct audit quality impact such as the extent to which internal controls are effective. Management report enables the client to review the internal controls' weaknesses and strengths. All these elements are there to ensure audit quality.

IFAC (2008) documented that the supply chain of financial reporting is simply individuals involved or processes implemented when financial reports are prepared, approved, audited, analyzed and utilized. It was also observed that there is need for the links to be interrelated and be of a higher quality so that financial reports of high quality are delivered. These links are proven to have an impact on audit quality.

Audit regulations, corporate governance, timetables of financial reporting, information systems, applicable financial reporting framework and others are under contextual factors. All these has the potential to affect audit quality either directly or indirectly as well as the quality of financial reporting.

2.4.4 Disruptive theory

It was a development made by Christensen in the year 1990. Some of the concepts of this theory is that old technologies can be easily be driven away upon any new technology entrance and this also applies to the markets. A combination of AI and machine learning is one of the recently recognized disruptive technological tools used today. Yadav *et al*, (2017) reported that in terms of how business is conducted and how data is being processed, new technologies including AI are replacing the traditional approaches. Zhang *et al*, (2020) reported that the reason why disruptive theory has been accepted is due to the benefits and rewards associated with using it.

2.4.5 Technology acceptance theory

This was Davis' invention in the 1989s with the aim of investigating on how well new technologies like AI are being accepted by the business community, researchers as well as the work environment. It is used to measure how new technological innovations are being appreciated. Davis's (1989) findings were new innovations in technology, computer usage, technology application and acceptance in human activities are impressive as they are speeding up processes and acting as an excellent problem solver. Dagiliene and Kloviene (2019) observed that the appreciation of AI has brought about new ways of communicating, doing business as well as enhancing critical thinking. The theory suggested that they are factors that influence how people accept and use new technologies which are deemed usefulness, attitude, ease of use and subjective norms. Focusing on the adoption of AI, the usefulness of a technology and how it is easy to apply are essential elements to determine whether or not external auditors adopts AI-based solutions.

2.5 Empirical literature review

2.5.1 Determining the relationship between AI and audit quality and the work of external auditors

AI is regarded as the future as well as the reality and many scholars has named the era of AI growth as "the rise of machines". However, there has been an ongoing debate as to whether AI has an impact on audit quality and the work of external auditors or not. In this era of big data where vast amounts of both structured and unstructured financial data are produced by accountants requiring auditors to examine, AI has been applied. Ologe (2020) reported that the world's Big Four auditing firms has been investing in innovative technologies that are AI and advanced analytics as way of creating competitive advantage. Financial statements and internal controls today are designed, prepared and presented electronically forcing auditing firms to digitalize so that it is easy to satisfy audit objectives. Some studies have shown that AI plays a vital role on the improvement of audit quality, audit process and audit work efficiency and effectiveness. Other researches showed that no transparent link is yet shown on the capabilities of AI and transforming the auditing exercise.

The relationship that exists between AI and audit quality is positive accrediting the improvement of audits to AI (Adeoye *et al*, 2023; Ghanoum and Alaba, 2020 and Al-jaaidi *et al*, 2023). Ghanoum and Alaba (2020) documented that the positive relationship is based on the capabilities of AI to automate repetitive tasks, eliminate human errors, review documents, detect material misstatements and assess audit risk. Yebi and Cudjoe(2022) reported that there is a moderately significant relationship between AI and auditors work as AI is not yet capable of effectively and efficiency carry the whole audit process.

2.5.2 Assessing the impact of applying AI on the work efficiency and effectiveness of external auditors

External auditors for the past years reported to have encountered complex accounting systems of their clients and a new need emerged which is that of giving their clients audit assurance whilst auditing on their complex systems. The need to also use advanced technologies has risen during auditing processes and for external auditors to gain competitive advantage, AI technologies are being adopted. Patel (2023) documented that when carrying out audits the need for manual labor has been eliminated by AI since most auditing processes have been automated for instance the process of detecting potential fraud.

Tasks carried out by AI ensure audit quality maximization by helping auditors in the accurate detection of potential fraud and errors within complex transactions of a client. Kokina and Davenport (2017) published that a lot of repetitive tasks have been wiped out by AI and this has enabled auditors to check the clients' business operations thoroughly by analyzing great numbers of data. There are activities in the past that required manual labor from the auditors for instance document review or processes of entering data, all these have been automated leaving auditors with time to focus more on important areas of the audit process.

Kokina and Davenport (2017) posited that when using AI more transactions can be tested by the auditors. Ghanoum and Alaba (2020) confirmed that utilizing AI enables auditors to focus more on other complex duties of auditing. AI systems assist auditors in locating and processing financial data generated by the client's reporting systems (Kokina and Davernport, 2017).Workload through AI integration is minimized and finding relevant auditing information requires less time.

AI systems are reportedly putting most of the accountants at risk of losing jobs as audit tasks are automated. Hemin (2017) reported that most companies in the future will no longer need auditors since developers are working towards having AI tools that will be efficient at error identification and financial data peculiarities. Most of the work of external auditors has been taken over by AI. ICAEW (2016) concluded their study by stating that it is to their findings that 95% of accountants today are at risk of losing their employment because of advanced technologies development. However, Cahyadi (2020) argued that AI is never to replace human auditors as it is not capable of performing tasks that requires human judgment but will rather transform the audit profession. Since skills and competency levels of auditors are affected by AI integration and Kokina and Davenport (2017) suggested that auditors must work towards acquiring skills that are more advanced than these AI technologies.

2.5.3 An investigation on the effects imposed by AI on audit quality and factors leading to these effects

Studies have shown that AI integration in audits has led to audit quality improvement. Accounting entries are analyzed through computers and this changes how audit processes are carried out. Nwakaego and Ikechukwu (2015) published a paper stating that audit quality assurance is provided during AI-based auditing processes. AI helps auditors in the accurate detection of potential fraud and errors within complex transactions of a client thus leading to audit quality maximization. Kaplan and Haenlein (2019) reported that the company's methods of accounting are scrutinized by AI for any errors thereby contributing to maximization of audit quality. AI integration in auditing processes is an invention that has led to the reduction of human errors further leading to high-quality audits.

AI enables audit procedures and processes to be completed when they are needed, thoroughly and also in an accurate way positively influencing audit quality. Human errors are also minimized in all this process as AI leads to the creation of automatic entries. Earley (2019) posited that when utilizing AI-based innovations, procedures of auditing are automated from one stage to another stage. From pre-engagement activities to the compilation of reports, AI integration is the gateway to ensuring audit quality while at the same time making the work of auditors less monotonous.

AI can beneficially change the auditing process and allows the accurate and efficient way of conducting audits (Kokina and Davernport, 2017). A much better understanding of the client's financial statements is facilitated by AI therefore enhancing audit quality and audit reports that are reliable tend to be issued. Luo *et al,* (2018) published that automation enables auditors to give focus on the clients' greater value activities therefore ensuring audit quality.

Henry and Rafigue (2021) posited that there are risks of audit quality devaluation and this can happen only if there is no proper audit process monitoring. Hemin (2017) agreed that excessive usage of AI lowers financial audit quality. Inherent risks can also be introduced to the AI systems if input data is not properly screened(Ahmed, 2022). Henry and Rafigue (2021) posited that if AI is not properly implemented it is likely to distort audit quality also burdening auditors with a lot of work as they will have to make reviews on the already completed tasks to check on what stage the system went wrong.

2.5.4 To determine how AI- associated procedures impact material misstatement detection and audit risk assessment

ISA 450 views information to be materially misstated when it contains information that is inaccurate to an extent that affects the decisions made by stakeholders and accountants can do this unintentionally or intentionally. Audit risk is the likelihood of an auditor issuing an inappropriate

opinion pertaining the financial statements of a client that is the auditor may fail to detect material misstatements(ISA 315) and there are three types of risks which are inherent, detection and control risk. This objective seeks to determine how AI assist external auditors in the process of detecting fraud and errors as well as assessing audit risk.

ISA 200 states that having an understanding of a client's business environment including material risk assessment due to fraud is important as it used to appropriately determine the scope of the audit. The traditional way of fraud and material misstatement detection is being threatened by the automation of business activities and big data (Gerber, 2023). AI therefore eliminates the limitations of using the traditional approaches to detect material misstatements and assessing audit risk in an era of big data by providing tools and methods that best suit the environment.

When aiming to enhance audit processes' accuracy and efficiency as well as detecting fraud and errors in a company's financial statements, AI is being utilized. AI is being used in auditing processes to detect problems within a company's accounting methods. Kumar (2020) reported that fraudulent entries can be detected by AI at the same time minimizing human intervention. Considered to be a relevant and reasonable way of minimizing human errors is the application of AI when carrying out audits (Kokina and Davenport, 2017).

AI is provided with the capacity to integrate as well as analyze diverse data (Gerber, 2023). By analyzing vast amounts of data, all misstatements that could have not been detected by traditional auditing approaches are noticed. AI-based technologies can easily identify high-risk transactions and this cannot be done by conducting audits manually since small samples are tested. AI integration enables a much larger sample audit testing (Issa *et al*, 2016). Data patterns can be identified making it easy for fraud to be detected also. Deloitte Zimbabwe uses generative AI to identify suspicious transactions, unveil potential fraud and assess risk.

Gerber (2023) reported that AI succeeds at anomaly identification in a client's financial data. Trained machine learning models can identify normal trends within a data set and any unusual trends are easily highlighted and further investigated. AI integration in audits enforces financial data patterns and trends to undergo analysis making it easy to detect fraud. Kokina and Davenport (2017) state that AI is designed with the ability to predict and this is considered to be a game changer in detecting fraud within financial data.

Financial information that needs to be audited is sometimes unstructured for instance emails, contracts or memos and NLP enable external auditors to scrutinize this form of data for any fraudulent activity indication. Financial transactions can be easily monitored enabling potential fraud detection and addressed with time.

2.5.5 To identify auditors' skills and competencies requirements that are needed when conducting audits in an AI-based environment and how audit firms can cope with these requirements.

Issa *et al,* (2016) reported that AI integration in auditing has disrupted auditors' skills making them insufficient and inefficient and recommended that external auditors need to undergo training for them to stay relevant. KMPG Report (2018) identifies five auditors' skills that are essential in this era of the rise of AL, ML and big data and these are continuous learning, communication skills, technical skills, critical thinking, professional skepticism and judgment as well as interpreting and analyzing data.

Firstly, in an environment where AI is evolving daily, auditors must be equipped with a mindset of continuous learning. Gerber (2023) state that there is a need for external auditors to be up-to-date with AI technologies as well as methodologies. Continuous learning enables auditors to carry out the auditing process in a technologically advanced environment with confidence at the same time remaining professionally skeptical. Issa *et al,* (2016) recommended that auditors must engage

in practices like attending workshops, AI in auditing seminars and educational resources for them stay relevant. They must also be aware of the industry trends, changes in regulations and any advancement in technology.

Moreover, communication skills are also an essential skill that external auditors operating in AI-based environment need to acquire. Gerber (2023) documented that communication skills are an auditor's top skill. This skill implies that the auditor will be able to explain concepts of AI and audit opinion in an understandable manner to its stakeholders (KMPG, 2018). Stakeholders today now require explanation on why an external auditor issued any type of audit opinion as compared to the past where no explanation was needed. Stakeholders need to understand the results which could have been made by AI-powered tools and auditor's strong communication skills are required(Issa *et al*, 2016).

In addition, when designing and implementing AI solutions, auditors must have excellent technical skills that is having a deep understanding in programming language, AI- based tools, algorithms and data visualization. An auditor must be aware of all types of AI-powered tools that are available and used when carrying out audits as well as how these are used. Being familiar with SQL is also essential so that it is easy for an auditor to work using databases as well as be able to retrieve and analyze data. Kokina and Davenport (2017) posited that if an auditor learns Python, it will be easy for them to work with AI tools that require coding for instance building models or data analysis automation.

Lastly, auditors are required to always be skeptical and excuse professional judgment when carrying out audits in an AI-powered environment. Critical thinking is also recognized as essential since the auditors is expected to ask rightful questions and make meaningful suggestions that indicates a reasonable level of understanding of the client's business environment. Designing and executing an audit engagement requires skeptical thinking so that high-quality audits are achieved.

For Deloitte Zimbabwe to cope with the changes in the AI- based auditing industry, continuous AI training, partnering with AI providers, hiring AI expertise and focusing on audit tasks that are of high-quality is essential.

Sweden

A study of the impact of artificial intelligence on auditors' skills and competence, audit process and audit quality Yebi, D. K., and Cudjoe, E. K. (2022)

This research's purpose was making an investigation on how audit process, audit quality and the auditors' skills and competencies are impacted by AI. Method of qualitative research with the combination of literature reviews were used to analyze data. In their publication, Yebi and Cudjoe (2022) posited that the usage of AI in auditing has a positive impact on the audit process and audit quality as it helps in financial statements anomalies identification and gathering data as well as audit evidence. They further reported that the application of AI on the work of external auditors is also significantly affected and for auditors to stay relevant, the most essential skill in demand is now IT skills. The conclusions were that AI has simplified the process of auditing hence more focus is now given on other audit issues.

Nigeria

Artificial intelligence and audit quality: implications for practicing accountants. Adeoye, I.O., Akintoye, R. I. ; Aguguom, T. A., and Olagunju, O. A. (2023)

The aim of this study was to have an examination on the impact of AI on audit quality and this was conducted by the use of survey method as well as questionnaires sent to the practicing accountants. Other methods used were a combination of inferential analysis and descriptive statistics. It is to their findings that AI (robotics, generic algorithms etc.) has a direct positive impact on the audit quality. A conclusion that AI specifically NLP on stratified data in auditing

helps in quickening the communication channel was drawn. A recommendation was given to accounting firms and other players in the corporate world that there is need to fully embrace the usage of AI as it leads to audit quality improvement.

United Kingdom

***Impact of artificial intelligence on auditors: a thematic analysis*.** Henry, H., and Rafigue, M. (2021)

The purpose of this research was to have an understanding of the effects of the integration of AI in audits based on the auditors' perceptions and experiences. The methods utilized in this study were interviews which were semi- structured. In their research study, Henry and Rafigue (2021) reported that most of the manual audit procedures that used to be repetitive were eliminated by the application of AI. Traditionally, the opinion of an auditor was based on the sampled financial statements but due to AI, the whole population can be examined. They also published that one of the positive impacts of auditing using AI tools was that client value increased as well as audit quality was maximized. Henry and Rafigue, (2021) elaborated that there is a risk of devaluing audit quality if processes are not well monitored and also some input data is likely to introduce inherent risk if not properly screened therefore recommending that acquiring new skills was necessary for auditors. A conclusion that there is a positive relationship between AI and audit quality was drawn.

Sweden

Integration of artificial intelligence in auditing: The effects in auditing process. Ghanoum, S., and Alaba, F. M.(2020)

This research objective was to examine on how the audit profession has been changed after AI integration in the audit processes. As this is a qualitative research, data collection was through

interviews. The study found that AI enable auditors to conduct series of tasks at once as compared to the previous traditional way of waiting for a certain task to be completed so that the next is conducted. AI has enabled the auditors to easily carry out internal control tests more effectively. It was concluded that AI comes with a speedy and accurate way of conducting audit thereby enhancing the audit quality as well as enabling the auditors to have deeper look at the clients' financial statements (Ghanoum and Alaba, 2020).

United states of America

The emergence of Artificial intelligence: How automation is changing auditing. Kokina, J. and Davenport, T. H. (2017)

The research's purpose was to give an overview of how AI is changing the audit processes as well as how it is affecting the auditors in carrying out audit procedures and this was done by utilizing questionnaires under quantitative methods and interviews under qualitative methods. The results were that AI integration in audits comes with numerous benefits which are the ability to analyze big data using minimum resources and time. Kokina and Davenport(2017) reported that AI is capable of identifying data trends hence making it easy to detect any unusual trends caused by fraud or error. Overall, AI has a positive impact on audit quality as it increases an auditor' chance of detecting material misstatements and assessing audit risk.

Netherlands

Impact of artificial intelligence on the work of external auditors: A case study on the Big four firms. Cahyadi, N. (2020)

The aim of paper was to make an investigation on how and to what extent auditors' jobs especially those working on the Big 4 firms are being transformed by AI. The research was done by directly extracting information of those firms' websites and published literatures. On this research study, Cahyadi, (2020) published that AI moderately changes the work of auditors and has taken over most of the tasks that used to be the burden of the auditors which includes document reviews. They also reported that AI is integrated in most of the audit process stages except for those stages that

need human interaction or other technologies. Cahyadi(2020) reported that new skills are required for auditors to operate in the AI era and these includes advanced analytical skills and communication skills. The author concluded that AI has given the external auditors more time to focus on a deep analysis of data and is not meant to replace the human auditors but rather compliments them.

Iraq

The impact of Artificial intelligence application on the performance of the external audit profession. Allami, F. A. J. (2020)

The purpose of this study was to unveil AI's impact on the auditing profession. Inductive approach was used in this study that is books were extrapolated and analyzed, related literatures were studied as well as questionnaires were sent out. Allami(2020) reported that AI assists auditors in fraud and error prediction. This enables the external auditors to deliver high quality audit opinion to the client and a true and fair face of the business is reviewed. It was also reported that when using AI, the element of personal estimates is eliminated when passing judgements that is the usage of AI enables the auditors to give a bias-free audit report as well as practices objectivity at its max. Allami(2020) concluded that AI is useful in good audit planning, procedures developments and problem identification on clients' accounts.

Saudi Arabia

The impact of artificial intelligence applications on the performance of accountants and audit firms in Saudi Arabia. *(*Al-jaaidi, K.S., Alwadani, N. F and Adow, A. H.(2023)

This study aimed to research on how AI application have affected accountants' performance and the audit firms at large. Survey-based methods are used in this research. This research reviewed that there are traceable improvements in auditors' performance who work in firms where AI is

being utilized further confirming an existence of a positive relationship. AI applications has reduced the time and resources utilized to complete an audit process, increased the competence level of the audit team by assisting in materiality determination and sample selection and by assisting in assessing audit risk (Al-jaaidi *et al,* 2023).

Algeria

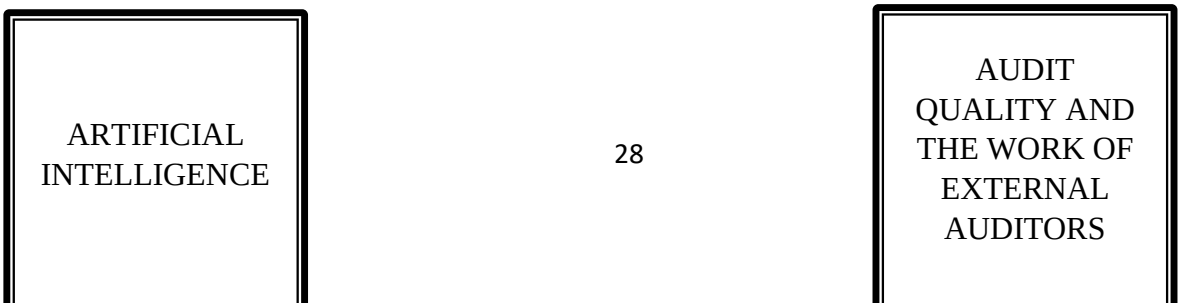
Current and future applications of Artificial intelligence techniques in the audit profession. A case study of the Big Four Audit firms. Boubaya, N. (2022)

The main focus of this study was to review how AI techniques are being implemented in the auditing industry and how it is affecting the audit profession now and in the future by employing a case study method as well as descriptive approach. In their publications, Boubaya(2022) reported that AI is significantly improving the audit profession by saving the cost of auditing, simplifying the whole audit process and producing results in a timely manner. Auditors are freed up from tasks that used to occupy their time making them be focused more enhancing more knowledge on data analysis and providing consulting services (Boubaya,2022). Concluded in this study is that AI improves the auditing profession but is never to replace human intelligence which is needed in interpreting and analyzing audit evidence.

2.6 Research model

Figure 2.3 Conceptual framework

Independent variable **dependent variable**



Source: Author's illustration (2024)

Quantitative measurement of variables

Variable	Measurement
Independent variables	
AI-adoption level	Number of AI-tools utilized
AI-auditing related procedures	Accuracy rate
Auditors' experience with AI	Level of expertise
AI-training to auditors	Training seminars conducted
Dependent variables	
Audit quality	Fraud detection
Work of external auditors	Work efficiency and effectiveness

Source: Primary data(2024)

Research model commonly known as conceptual framework is defined as an analytical tool or structure that displays an overall view of the research project Kivunja(2018). The framework assists in gaining an understanding of research-related components. Under this study, the independent variable is artificial intelligence that is by no means affected or influenced by other factors in this case that is audit quality and the work of external auditors. The dependent variables that are influenced by the independent variable(AI) in this research are audit quality and the work of external auditors.

Above is the research model of this study giving an illustration on the impact of AI on audit quality and the work of external auditors. Each auditing process in carried fully or partly by AI-based tools which in turn affects audit quality as well as the scope of external auditors' work.

2.7 Research gap

Several researches have been conducted recently and others are on-going on the impact of AI on audit quality and the work of external auditors and these are mostly conducted in developed economies where technology has become their day-to-day usage. This research aims to investigate how AI is impacting audit quality and the work of external auditors at the same time having an analysis on effects of AI on audit risk assessment, material misstatements detection and the challenges of using AI. Since the relationship between AI and audit quality is unclear this study attempts to discover it.

2.8 Chapter Summary

A summary of the literature about the impact of AI on audit quality and the work of external auditors is outlined. The objectives of this research serve as a guide through the writing of this part of the study. Answers to some of the research questions are addressed also in this chapter to enhance deep understanding of the topic in research.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

Saunders *et al,* (2016) define research methodology as an employment of structured as well as systematic approaches to a research. The contents of this chapter include an analysis of the data-gathering tools the researcher have utilized in the data collection procedure. Some of the key aspects looked at in this chapter are research philosophy and design, sample size and sampling methods, data collection methods, analysis and presentation methods, validity, reliability as well as ethical consideration.

3.2 Research philosophy

Philosophical position has always influenced how researchers carry out their research studies. Saunders *et al,* (2009) viewed research philosophy as the knowledge development procedure during research and also this knowledge development's nature. Research philosophy is the foundation of any research program hence the determination of a philosophy that gives a faithful representation of the research study is considered vital. Research philosophy determination should be done before the selection of research methods and before any research design commencement (Creswell, 2014).

The major component of research philosophy is positivism which implies that the researcher is independent when collecting data and no undue influence of the researcher is reflected in the data. The researcher therefore made sure that no personal biases influenced the study. Underlying this study was positivism as this research objective was to have an evaluation on the effects of AI on audit quality and the work of external auditors.

3.3 Research design and approach

McMillan and Schumacher(2001) define a research design as a unique approach which the researcher uses in addressing the research objectives and there are 3 major types of research designs mostly used which are explanatory, descriptive and lastly exploratory. For this research's purpose, the researcher adopted an exploratory research design as this was a perfect method when trying to gain more knowledge on new study areas in this case AI which is a new technology implemented on auditing. Procedures done by the researcher under exploratory research design included online visits to the Deloitte website, books and journals review, internet literature reviews as well as newspaper reports.

3.4 Data collection methods

The main objective of this study was to evaluate the impact of AI on audit quality and the work of external auditors and a mixed approach of qualitative and quantitative research methods was adopted. Literature review on the concepts of the research area and open questions interviews are the commonly used qualitative methods (Bandari, 2023). Qualitative methods of research are essential in gaining an insight on the merits and demerits of a certain subject from those directly affected and reviews subjectiveness at most. Since the researcher was after gathering the views and perceptions of auditors, this was a perfect methodology because they are the ones affected by the integration of AI in auditing processes. The researcher aimed to gather more opinions and views of external auditors and its partners as the representatives of the external auditors operating in Harare.

Meaning was constructed by both the researcher and the participants through the use of dialogues that is it was mostly through interviews. Commonly used social media sites by the auditors such as LinkedIn and emails were used by the researcher to contact the participants. The participants(

partners and external auditors) were briefed on the research objectives and online meeting requests were also arranged. As an appreciation of technological advancements, Zoom meeting and Microsoft teams were utilized in conducting interviews online. This was of a greater convenience as compared to the traditional face to face interviews as all interviews were recorded with the permission of the participants .

The period in which the interviews were conducted was December 2023 up to February 2024. Recording of interviews mitigated chances of data loss and re-listening to the interviews records before data analysis to avoid bias recording was made possible.

Semi-structured questionnaires were also used as a form of collecting data numerically. Online platforms were also used to distribute these questionnaires such as Google Forms and as well as door to door delivery and collection. All the collected data from the issued transcripts were aggregated on an Excel spreadsheet.

3.5 Targeted population

Lohr (2010) define a target population as group of individuals extracted from a general population and often has the same characteristics. Since this study was on how audit quality and the works of external auditors are being impacted by AI integration, auditors at the entry-level, middle-level, audit associates and audit managers were the targeted segment specifically those who were working at Deloitte & Touché Zimbabwe in Harare. Number of respondents totally to 42 were expected but the workable sampling size was determined using the formular invented by Taro Yamani. Below is **Table 3.1** showing the target population.

Table 3.1 Target population

Participants	**Population**

External auditors	30
Engagement Partners	12
Total	**42**

Source: Primary data(2024)

3.6 Sampling size

A formular by Taro Yamani was used in determining a workable sample in this study. The sample size is a numerical measurement derived from a population under statistical research study (Lohr , 2010). The chosen uncertainty related with the estimates commonly known as the degree of error in this research was determined by the techniques of sampling and the population variability. After taking into consideration the above listed factors, 5% was utilized as the degree of error. The formular is given below;

$$Y = \frac{N}{1 + N (e)^2}$$

Where;

Y	N	1	E
Sample size	Study population	Constant	Degree of error(5%)

Sample size determination

Table 3.2 Sample size

SAMPLING SIZE WORKING	WORKABLE SAMPLE SIZE
For the external auditors with a population size of 30 = 30	= 27

1 + 30(0.05)^2	
For the partners of Deloitte Zimbabwe with a population size of 12 = 12 1+ 12 (0.05)^2	= 11

Source: Primary data(2024)

It is therefore given that the workable sample sizes for external auditors and its partners were 27 and 11 respectively.

3.7 Sampling methods

These are techniques used in the process of selecting participants in a study (Creswell, 2014). Provided that the population is small everyone can be included in the study but mostly the population is massive so a sample from the population has to be drawn to represent the whole population (Lohr, 2010). The commonly used techniques are probability sampling for example random sampling and cluster as well as non-probability sampling for example snowball, quota and convenience. For this study, the author employed both the non-probability and probability sampling methods to achieve the research goals.

The researcher opted for a judgmental sampling technique under the non-probability method since external auditors' engagement was limited due to the dissolution phase. The judgmental sampling method is a technique of sampling where participants selection is wholly based on how they can contribute to the research study. Participants must be able to give a deep insight into the questions of the study under the judgmental sampling method (Creswell, 2014). Mostly under this sampling method, there is high usage of the researcher's judgment in identifying as well as selecting individuals from which best information is extracted that will be useful in achieving the objectives of the study. Commonly used in mixed methods studies and qualitative research, the judgmental method was deemed to be suitable for this research since the firm was dissolving so auditors who could contribute to this study were contacted. Since the researcher was aiming to obtain rich

information form a firm going through a dissolution having limited access to information and resources, judgmental method of sampling was useful despite the risks of observer biases.

When utilizing the judgmental sampling method making statistical inferences is close to impossible and to eliminate this, the stratified random probability sampling method was also used. This method involves dividing a population into strata based on common characteristics or attributes. The formulation of strata in this study was based on the auditors' work experience and assumed knowledge of AI. The subgroups/ strata were the junior auditors, senior auditors and the partners. Utilizing this sampling method in this study enabled the researcher to have the auditors' perceptions at all levels on the impact of AI on audit quality as well as their work.

3.8 Research instruments

Research instruments are portrayed as devices used in the process of gathering information from participants and in establishing an understanding on the research topic (Creswell, 2014). In the quest of enhancing an understanding on the impact of AI on audit quality and the works of external auditors, interviews and questionnaires to Deloitte and Touché external auditors and partners sited at the Harare offices were employed in this study. The case study approach was also employed by revisiting articles, journals and websites of the firm.

3.8.1 Interviews

A definition that best fits an interview is a one-on-one conversation between an interviewer and the interviewee where the interviewer gets to ask questions relating to a certain topic to the interviewee (Myers, 2014). Saunders *et al*, (2016) pointed out that when conducting interviews, the 5 Ps(*Prior Planning Prevents Poor Performance*) must be followed for favorable outcomes. This has resulted in the researcher having to plan the interviews by first researching on the topic study, arranging the relevant questions to be asked and getting to know the interviewee so that all

important areas of the study are covered. For those junior auditors who were not highly informed about AI, additional speculative questions were prepared. Virtual interviews were conducted during this research study.

The pros of interviews

With the research objectives in mind, the researcher was able to collect authentic data from reliable auditors thereby enabling true data analysis. The sample was easy to control making data collection easy to conduct. Conducting online interviews was proven to be cost effective as without traveling and incurring other related costs, high-quality data was collected and honest responses to the asked questions was high.

The cons of interviews

Scheduling for the interviews was difficult provided that the respondents were busy or unavailable since the interviews are to be conducted midst the firm's dissolution. In the most circumstances, the interviewee's responded basing on what they think the interviewer was searching for rather than voicing out their true opinions and insights on a certain area. The limitation which was faced when conducting online interviews was that of poor network connections and this made some of the interviewee's points not clear.

3.8.2 Questionnaires

To collect useful information from participants, a collection of questions was used as a research instrument and these are known as research questionnaires. When collecting reliable as well as relevant information, the researcher has to design a questionnaire which consists of both open ended and close ended questions (Saunders,2017). Creswell(2014) published that an open-ended questionnaire enables the respondents to share openly on their thoughts and in their own language/ words. Close-ended questions are those questions from which a set of alternatives are given for the respondent to make choice from (Creswell,2014). For the collection of quantitative data, close

ended questions are utilized in most researches and a Likert scale is used for respondent to make a selection.

Merits of questionnaires

Questionnaires gave the respondents the privilege to answer questions anonymously and this gave a rise to more honest answers. Questionnaires were useful as the researcher was minimizing the research costs. Saunders *et al*, (2016) posited that data collected through the use of questionnaires is consistent and in a standardized format.

Demerits of Questionnaires

Clarity to the given answers by respondents was limited as compared to interviews where unclear answers were further elaborated. Challenges were faced in the designing of a clear questionnaire which can be understood by all the groups of the target population.

3.9 Data presentation

After data has been collected it needs to be presented briefly and clearly so that the research outcomes are communicated and under this study, cumulative frequency, tables, charts, graphs and polygons were used. To form opinions and drawing conclusions, tables were employed and percentages aided in examining the collected data. To generate the graphs for data presentations, the researcher used Microsoft Excel.

3.10 Data analysis

Data analysis for the data collected is needed so that it will be meaningful as well as be able to satisfy the research objectives (Saunders, 2007). To analyze interviews responses, thematic analysis was used which takes a look at data patterns and reads through data sets to search for themes. Thematic analysis and sentiment analysis were employed to interview data and transcripts

in order to recognize common themes. To calculate and recognize the mathematical relationships and statistical tests of the impact of AI on audit quality and the work of external auditors, multivariate linear regression with SPSS 20 was used.

Analysis of multivariate linear regression

$$[AQ; WEA] = \beta_0 + \beta_1 AI\_Adopt + \beta_2 AI\_Exp + \beta_3 AI\_Proc + \beta_4 AI\_Train + \varepsilon$$

Where;

Table 3.3 Multivariate Regression equation

AQ	**WEA**	**B**	**AI_adopt**	**AI_exp**	**AI_proc**	**AI_train**	**ε**
Audit quality	Work of external auditors	constant	AI adoption levels	AI auditors' experience	AI auditing related procedures	AI training to the auditors	Error terms

Source: Author's illustration(2024)

3.11 Data validity

When the information pertaining a research clearly gives a representation on research findings, data is viewed a valid (Saunders,2007). It focuses mainly on how the research measurements were employed, the population that was targeted as well as the sample used. Saunders (2007) reported that in any research study there are typically two types of data validity which must be taken into consideration and these are external and internal validity.

Under Saunders's (2007) study, external validity is explained as an examination that must be done on the research findings in checking to see if they can be widely applied to another researches. In

most researches, the target population is usually large and in order to conduct a meaningful research, it is based on a sample which is randomly selected to represent the whole population(Wellek,2010). In this study, the researcher employed a random sampling method to select a representation of external auditors operating in Harare.

Internal validity gave the author and other parties interested in this research to assess whether the research was designed, executed and analyzed in a manner that permits trustworthy answers to the study questions. Saunders(2007) state that internal validity scrutinizes the degree to which systematic errors well known as research bias are present. The researcher in satisfying internal validity employed pilot testing in this research study.

3.12 Data reliability

The data is referred to as reliable when the methods used are consistent and have not failed in a research process(Saunders, 2007). When data is inaccurate or unreliable this can lead to decisions which are below standard, wrong conclusions and flawed models to be made. Cronbach's alpha is mostly utilized to ensure that the scale or measurements used are reliable by researchers when conducting research studies. 0 to 1 is the range of this Cronbach's alpha and analysts commonly utilize a benchmark value of 0.7 and any outcomes which is at this level or higher are considered to be indication of data reliability(Tavakol, 2011). In ensuring data reliability, the researcher clearly defined the research objectives and questions to be considered, the sources of data were carefully selected as well as the methods of conducting the study.

3.13 Ethical considerations

For every research conducted all parties must be presented ethically and the main objective of ethical consideration is the prevention of participants' privacy invasion and showing respect for their integrity. The rights of the participants at all costs are meant to be under protection(Bandari, 2022). The researcher would like to ensure that all the personal information of the participants was secured. Interviews were conducted as a way of gathering useful, relevant and reliable information and with this in mind, there was voluntary participation where all the interviewees were free to

decide on whether to participate or not without any undue influence or pressure. Confidentiality was also another ethical aspect taken into consideration under this research study. Any information that was personal which can reveal the participants' identity was detached. Lastly, the researcher wants to assure that in this study no personal data was included.

3.14 Chapter summary

This chapter gives a clear illustration of the research methodology used in this study of evaluating the impacts of AI on audit quality and the work of external auditors in Zimbabwe, Deloitte and Touché Zimbabwe being the case study. The major aspects that were addressed in this chapter included research approach and designs, target population and the sample size, sampling methods, data analysis and presentation as well as ethical concerns. The next chapter is to give a full description and illustration on data analysis and presentation.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

Quantitative data collected using the methodology stated in the previous chapter is graphically presented in this chapter using line graphs, tables, bar graphs, SPSS 20 and for qualitative data presentation, narrative description was utilized. Data findings as well as analysis respond directly to this research's questions and objectives.

4.2 Data reliability and validity test

Reliability test

Before using the collected data to draw conclusions on the impact of AI on audit quality and the work of external auditors, Cronbach Alpha(SPSS 20) is used to determine how reliable are the survey instruments and the data collected.

Table 4.1 Reliability test

Reliability Statistics

Cronbach's Alpha	N of Items
.810	21

Source: SPSS 20

An outcome value of 0.810 is obtained after the test as shown on the above **Table 4.1** and according Tavakol (2011) any value above a benchmark of 0.7 is an indication of reliable survey instruments.

Validity test

With the aim of assuring that the research questions on the questionnaires to be sent are clear and understandable, a questionnaire pre-test is carried out. Approx. 5% of the sample size is tested and adjustments to the questionnaire is done basing on the feedback from the participants.

4.3 Questionnaire response rate

Table 4.2 Questionnaire response rate

Identity	**Questionnaires mailed**	**Questionnaires completed**	**Response rate percentages**
external auditors	27	25	92.59%
Deloitte partners	11	5	45.45%
Total	38	30	78.94%

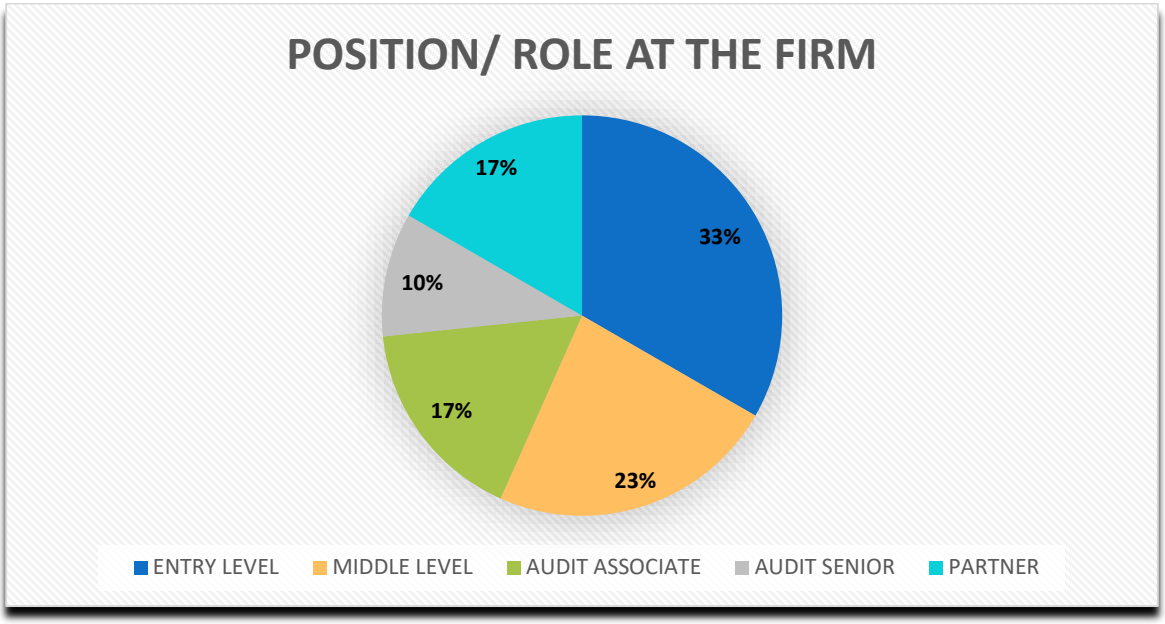
Source: Primary data(2024)

The minimum questionnaire response rate that is considered to be reasonable for a conclusion to be drawn is 60%(Piketty, 2014). Thirty-eight questionnaires were mailed to the targeted respondents who were selected to represent the whole population by judgmental and random sampling methods. Out of the sent questionnaires, thirty questionnaires are returned completed for analysis and conclusion and eight questionnaires remains uncompleted. The questionnaire response rate therefore is concluded to be of 78.95% which is totally acceptable for drawing conclusion on this research.

4.4 Demographic data

POSITION- BASED

Figure 4.1 Participants' position at the firm

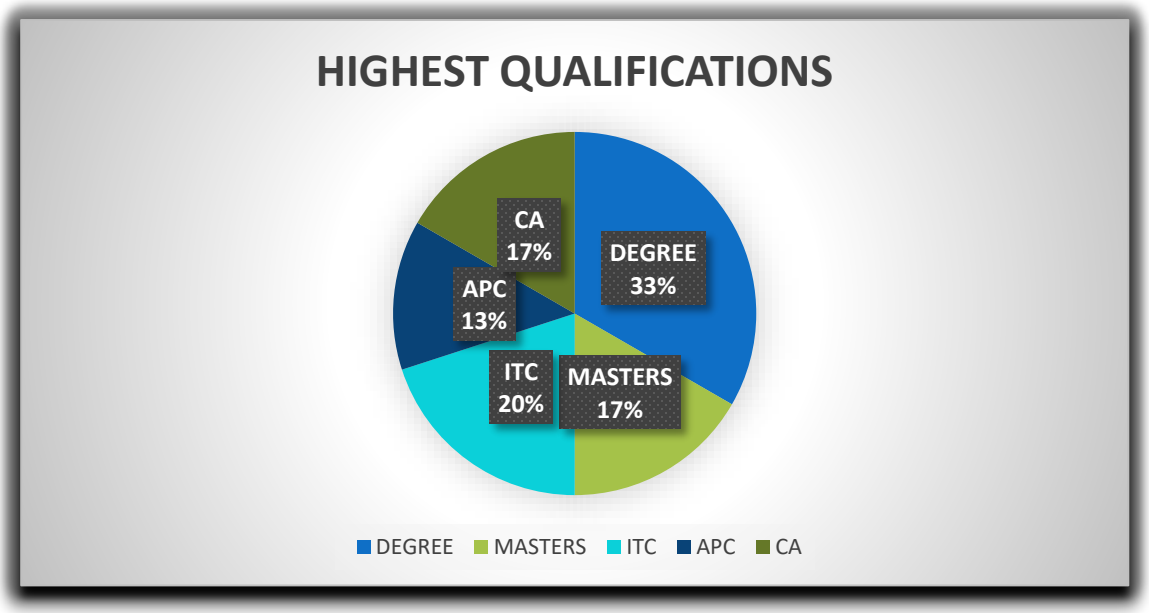


Source: Primary data(2024)

Most of the auditors who responded to the questionnaires mailed are at the entry level making 33% of the total respondents. The views and judgments of the entry level auditors can be relied upon since they participate in most of the audit process tasks, audit schedule implementation as well as audit program implementation using AI. **Figure 4.1** shows that all the respondents have knowledge on what AI in auditing therefore the data collected is used to drawing conclusions.

HIGHEST QUALIFICATIONS

Figure 4.2 Participants' highest qualifications

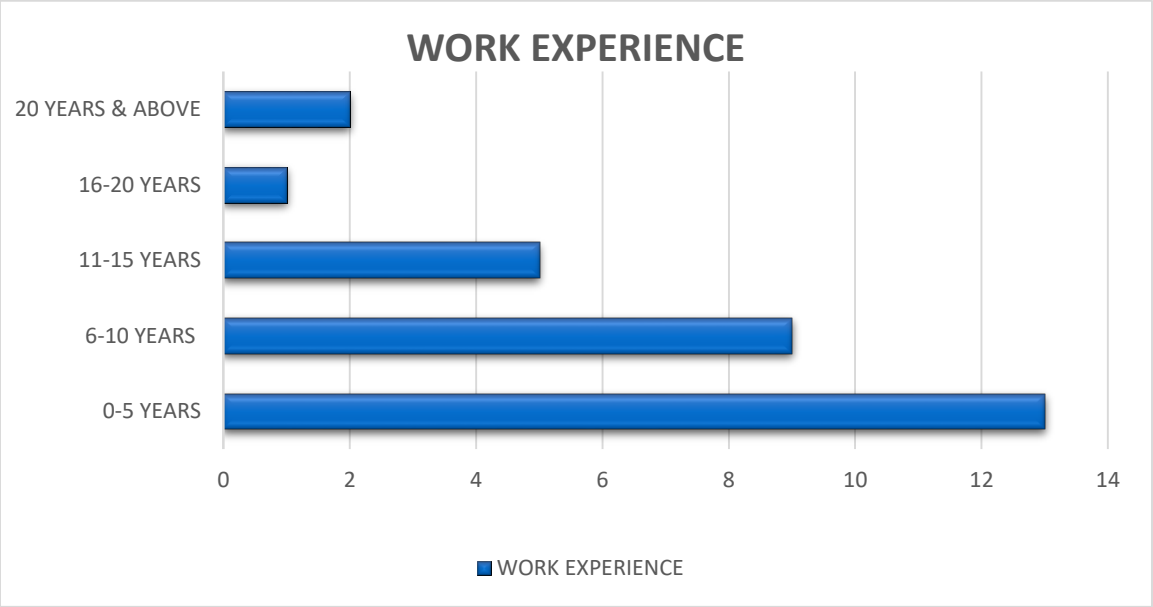


Source: Primary data(2024)

The researcher observes that from the collected data, all the participants are qualified to be external auditors having 10 participants(33%) with degrees in accounting and auditing, 5 participants(17%) being Masters holders, 6 participants(20%) having ITC, 4 participants(13%) having APC and lastly 5 participants(17%) being qualified CAs. These research findings on the highest qualifications of the selected sample are considered to be reliable and valid guided by the research of Martinez-Mesa (2016) which state that data that is derived from a qualified participants is considered to be appropriate and useful in drawing research conclusions.

PARTICIPANTS' WORK EXPERIENCE

Figure 4.3 Participants' work experience

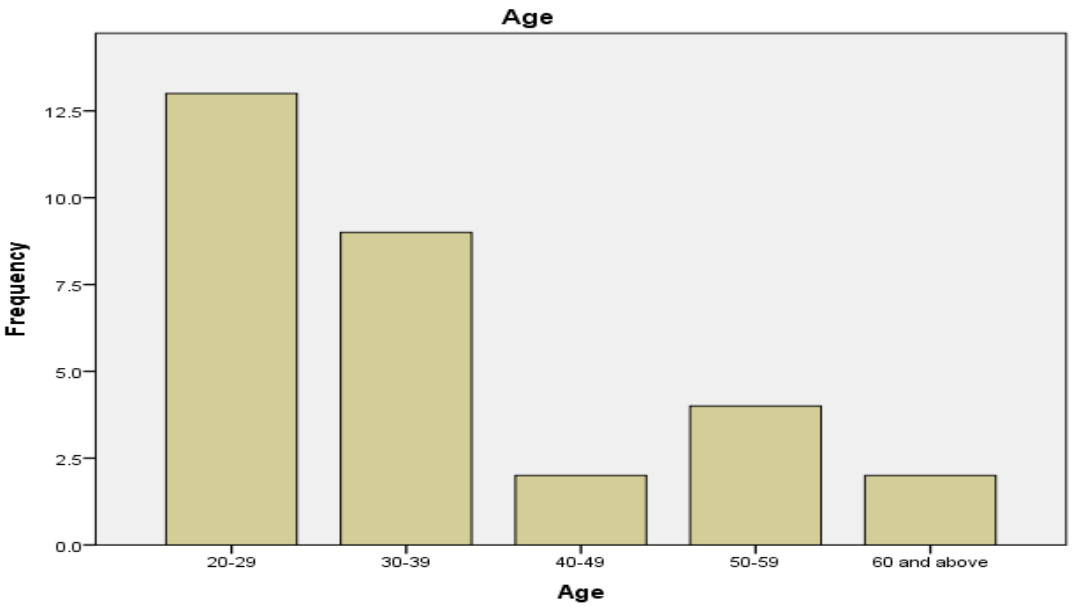


Source: Primary data(2024)

The data collected is relied upon since it is obtained from the participants who have got the necessary work experience therefore, they will reflect a true and fair view of what aspires in the auditing industry. The data summarized by the above **Figure 4.3** consist of 13 participants within the range of 0 to 5 years work experience, 9 participants under 6 to 10 years work experience, 5 participants under 11 to 15 years work experience, 1 participant under 16 to 20 years work experience and lastly 2 participants under 20 years and above work experience.

AGE OF RESPONDENTS

Figure 4.4 Age of the participants



Source: Primary data(2024)

Analyzing the data collected from the participants, more than 50% of the participants are young adults and according to the research conducted by Rogers(2003), it was documented that young adults tends to adopt technology at a faster rate as compared to older adults. The data collected in this research is considered to be reliable and valid since it is collected from generations of Millennials and Gen X that grew up in the era of computer introduction McKenna(2023) .

4.5 Relationship between Artificial intelligence and audit quality and the work of external auditors using Multivariate regression model

Table 4.3 Multivariate regression summary model

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	AUDIT QUALITY	29.801[a]	4	7.450	38.284	.000
	WORK OF THE EXTERNAL AUDITORS	55.585[b]	4	13.896	195.043	.000
Intercept	AUDIT QUALITY	1.322	1	1.322	6.792	.015
	WORK OF THE EXTERNAL AUDITORS	.003	1	.003	.036	.050
AI ADOPTION LEVEL	AUDIT QUALITY	.080	1	.080	.409	.028
	WORK OF THE EXTERNAL AUDITORS	.175	1	.175	2.451	.045
AUDITORS EXPERIENCE	AUDIT QUALITY	.457	1	.457	2.350	.018
	WORK OF THE EXTERNAL AUDITORS	.601	1	.601	8.429	.008
AI AUDITING RELATED PROCEDURES	AUDIT QUALITY	.823	1	.823	4.228	.050
	WORK OF THE EXTERNAL AUDITORS	.692	1	.692	9.717	.005
AI TRAINING TO THE AUDITORS	AUDIT QUALITY	.015	1	.015	.075	.012
	WORK OF THE EXTERNAL AUDITORS	.016	1	.016	.219	.038
Error	AUDIT QUALITY	4.865	25	.195		
	WORK OF THE EXTERNAL AUDITORS	1.781	25	.071		
Total	AUDIT QUALITY	368.000	30			
	WORK OF THE EXTERNAL AUDITORS	439.000	30			
Corrected Total	AUDIT QUALITY	34.667	29			
	WORK OF THE EXTERNAL AUDITORS	57.367	29			

a. R Squared = .692 (Adjusted R Squared = .647)

b. R Squared = .549 (Adjusted R Squared = .522)

Source: Primary data(2024)

The researcher conducts a multivariate regression analysis on the data collected with the aim of determining the type of relationship that exist between AI and audit quality as well as the work of external auditors. An adjusted R- squared value of 0.642 is obtained suggesting that the model is a good fit to the data. These outcomes reflect that 64,2% changes in the quality of audits and the work of external auditors are due to AI adoption levels, AI auditing related procedures, auditor's experience with AI and AI training to the auditors. AI is identified as a driver of audit quality and the work of external auditors and has a positive impact.

This is in consistent with the findings of Yebi and Cudjoe (2022) that AI integration in the auditing industry has positively impacted the elements of auditing such as audit quality, audit process, auditors' skills and competence for the past years. Ghanoum and Alaba(2020) favored the application of AI-enabled audit procedures due to its capability of improving all stages of an audit process as well as the quality. Adeoye *et al*, (2023) reported that after conducting a multivariate regression on the data findings, the outcomes indicated a positive relationship between audit

quality and AI. A further illustration of the relationship between AI and audit quality as well as the work of external auditors is given below on **Figure 4.4**

Table 4.4 Multivariate regression Parameters Estimates

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
AUDIT QUALITY	Intercept	.639	.245	2.606	.015	.134	1.145
	AI ADOPTION LEVEL	.137	.214	-.639	.033	-.578	.304
	AUDITORS EXPERIENCE	.381	.248	1.533	.029	-.131	.892
	AI AUDITING RELATED PROCEDURES	-.444	.216	2.056	.503	-.001	.889
	AI TRAINING TO THE AUDITORS	.057	.209	.274	.040	-.373	.487
WORK OF EXTERNAL AUDITORS	Intercept	.028	.148	.190	.051	-.277	.334
	AI ADOPTION LEVEL	.203	.130	1.565	.030	-.064	.470
	AUDITORS EXPERIENCE	.436	.150	2.903	.008	.127	.746
	AI AUDITING RELATED PROCEDURES	-.407	.131	3.117	.455	.138	.676
	AI TRAINING TO THE AUDITORS	.059	.126	-.468	.018	-.319	.201

Source: Primary data(2024)

AQ= 0.639+0.137+0.381+(-444)+0.57

WEA= 0.28+0.203+0.436+(-407)+0.59

The p value between the dependent variable of audit quality with AI adoption levels is 0.033, with auditors' experience with AI is 0.029 and with AI training to the auditor is 0.040 and according to Pallant(2005) if a p value of an independent variable is less than 0.05 it indicates that there is a statistically significant impact on the dependent variable. A greater p value of 0.503 indicates that there is no statistically significant impact of AI auditing related procedures on audit quality. Concluding from the above table, there is a statistically significant impact of AI on audit quality and this didn't occur by chance.

The p value between the dependent variable of the work of external auditors with AI adoption levels is 0.030, with auditors' experience with AI is 0.008 and with AI training to the auditors is

0.018. A greater p value of 0.455 indicates that there is no statistically significant impact of AI on the work of external auditors. All these outcomes reflect that there is a statistically significant impact of AI on the work of external auditors and this didn't occur by chance. The positive Beta values of 0.137; 0.381 and 0.057 respectively shows that AI has a positive impact on audit quality. The Beta values of 0.203, 0.436 and 0.059 respectively shows that AI has a positive impact on the work external auditors.

AI integration in audits has been for the past years increasingly impacting the work of external auditors and audit quality positively (Adeoye *et al*, 2023; Allami,2020; Al-jaaidi *et al*, 2023).

4.7 Assessing the impact of applying AI on the work efficiency and effectiveness of the external auditors

What are the most significant benefits of using AI on work efficiency and effectiveness?

Table 4.5 Model summary- AI benefits on the work of external auditors

Statistics

		REDUCTION IN EFFORTS AND TIME	IMPLEMENTING THE AUDIT PLAN	AUTOMATION OF REPETITIVE TASKS	DATA ANALYSIS
N	Valid	30	30	30	30
	Missing	0	0	0	0
Mean		2.47	2.73	2.50	3.93
Std. Deviation		1.358	1.552	1.480	1.143

Source: Primary data(2024)

Overall standard deviation= 0.179; overall mean= 2.9075

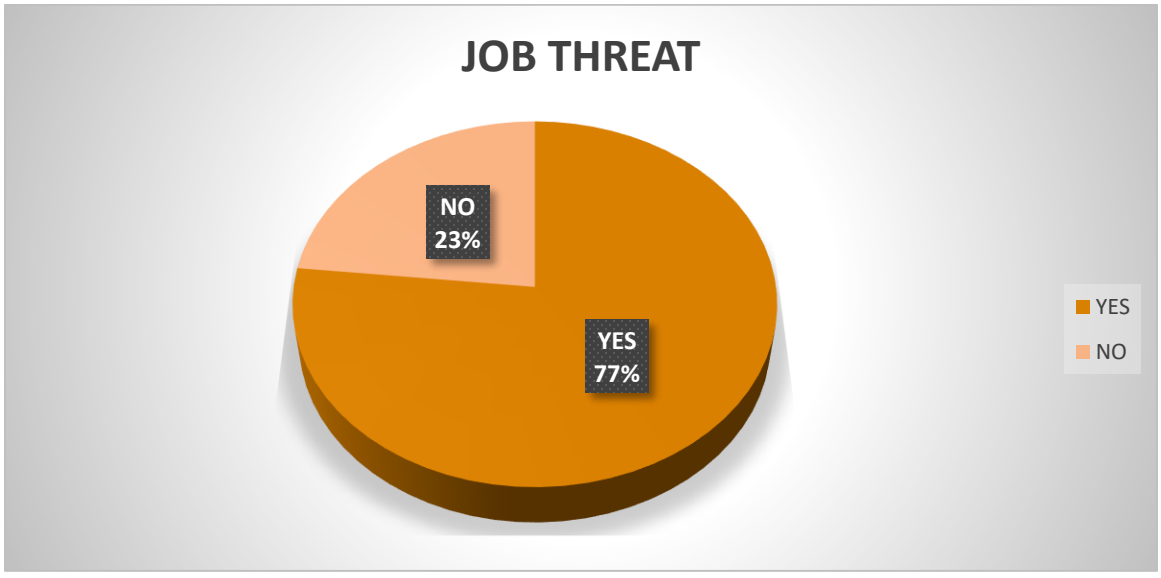
The participants were asked to give their opinions on whether they view AI to be beneficial in reducing human auditors' efforts and time taken to complete the whole auditing process, implementing the audit plan, performing repetitive tasks and analyzing data or not. An overall

mean value of 2.9075 and overall standard deviation of 0.179 is produced indicating that the participants are benefitting from AI in a similar way. The overall standard deviation of 0.179 indicates a positive sign on the effectiveness and also the reliability of using AI when auditing. The overall mean value of 2.9075 indicates that the participants agrees that AI has a positive impact on the work of external auditors reducing the human auditors' efforts and time taken, helping in the implementation of the audit plan, automating numerous repetitive tasks and however to a lesser extent helps in analyzing data.

This conclusion aligns with that of Henry and Rafigue(2021) that AI has automate quiet a number of the repetitive auditing tasks eliminating the high demand for human auditors' efforts. Boubaya (2022) documented that AI-based audits have reduced the time taken to conduct audits as compared to the traditional methods. AI has eliminated human reliance by its ability to conduct multiple audit procedures at once such as substantive testing without waiting for one stage to be complete before proceeding to the next level (Ghanoum and Alaba, 2020).

Are you going to say that AI-based tools are a threat to the continuous availability of auditors' jobs?

Figure 4.6: Job threat



Source: Primary data(2024)

Of the 30 participants who were asked they opinion on whether they view AI as a threat to continuous availability of auditors' jobs or not, 23(77%) participants disagree to the fact that AI is likely to replace human auditors and 7 participants (23%) agreed. The participants' supports their opinion basing on the following summarized facts

The majority of the participants pin points that AI- based tools are changing the audit profession by changing the audit work nature and not necessarily threating the continuous availability of auditor's jobs. During the audit process, interacting with the client is always essential and despite all the AI's ability to refine the audit work, it is not capable of interacting with the client hence the need for a human auditor. This is in consistent with the findings of Cahyadi(2020) that even in the future AI is never to replace human auditors at a human-to-human interaction level hence AI and the human auditors will always need to work hand in hand. Boubaya(2022) documented that AI in terms of practicing professional judgment and data analysis, it hasn't reached the human intelligence capacity hence there is still the need for human auditors. Allami(2020) reported that a machine was never equipped to take responsibility for an audit opinion, this aspect requires a human auditor.

Another aspect of auditing that AI is incapable of doing is to analyze as well as interpret audit evidence gathered so jobs will always be available to auditors but the skills requirements will only differ. This is consistent with the findings of Boubaya(2022) that in order for a machine to operate effectively and efficiently, human intelligence is needed hence AI is likely not to take over the whole audit engagement. The participants reports that they have witnessed that many of the essential auditing skills haven't been replaced by AI and this serves as an indication that auditors are still relevant. This is in consistent with the argument of Henry and Rafigue(2021) that any aspect known by a machine are taught to it by a human auditor and the data inputs used will have been delivered by also human auditors hence auditors' job securities are not threatened. Kokina

and Davenport(2017) documented that AI is only capable of assisting the auditor in audit planning and nothing more.

4.8 To investigate the effects imposed by AI on audit quality and factors leading to these effects.

What are the most significant benefits of using AI on audit quality?

Table 4.6: Model summary- AI benefits on audit quality

Statistics

		IMPROVED ACCURACY	INCREASED EFFICIENCY	ENHANCED RISK ASSESSMENT	BETTER DATA ANALYSIS
N	Valid	30	30	30	30
	Missing	0	0	0	0
Mean		2.33	2.47	2.83	3.10
Std. Deviation		1.446	1.383	1.621	1.447

Source: Primary data(2024)

Overall mean= 2.6825; overall standard deviation= 0.102

The participants were asked to give their opinions on whether they view AI to be beneficial in attaining high audit quality by improving accuracy, increasing efficiency, enhancing risk assessment and better data analysis or not. An overall mean value of 2.6875 and overall standard deviation of 0.102 is produced indicating that the participants are benefitting from AI in a same manner. 2.6825 overall mean value indicate that the participants all views AI having positively impacting audit quality and they all strongly agree. A small value for standard deviation 0.102 indicates that a positive consistent and predictable impact of AI on audit quality. The integration of AI in audits has strongly improved data accuracy, increased efficiency, enhanced risk assessment and somewhat improved data analysis.

This aligns with the findings of Adeoye *et al*, (2023) that AI in form of generic algorithms, robotic etc. has a positive impact audit quality as they are capable of automating some of the repetitive tasks which were known to impede audit quality as well as improving the detection of fraud and errors within the financial statements of a client. In line with this conclusion, Yebi and Cudjoe (2022) reported that AI enables auditors to achieve their audit objectives and conduct audit processes swiftly and effectively by automating auditing processes like substantive testing, internal control testing and identifying risks. Kokina and Davenport (2017) posited that fraud and error identification is made easy further ensuring the quality of audits is attained.

4.9 To determine how AI-associated procedures impact material misstatement detection and audit risk assessment

How effective do you find AI in assessing audit risk and detecting material misstatement?

Table 4.7: Model summary- AI usefulness in detecting material misstatements and assessing audit risk

HOW EFFECTIVE DO YOU FIND AI IN ASSESSING AUDIT RISK AND DETECTING MATERIAL MISSTATEMENT

N	Valid	30
	Missing	0
Mean		2.73
Std. Deviation		1.311

HOW EFFECTIVE DO YOU FIND AI IN ASSESSING AUDIT RISK AND DETECTING MATERIAL MISSTATEMENT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	TO A VERY LARGE EXTENT	6	20.0	20.0	20.0
	TO A LARGE EXTENT	9	30.0	30.0	50.0
	TO A MODERATE EXTENT	5	16.7	16.7	66.7
	TO A SMALL EXTENT	7	23.3	23.3	90.0
	TO A VERY SMALL EXTENT	3	10.0	10.0	100.0
	Total	30	100.0	100.0	

Source: Primary data(2024)

The above **Table 4.7** illustrates the opinions of the participants regarding the usefulness of AI in assessing audit risks and detecting material misstatements. The findings give an indication that the majority of the participants views AI on average to be assisting them in risk assessment as well as material misstatement detection. The standard deviation of 1.311 indicates that the responses to this question were spread out that is some views AI to be effective in detecting material misstatement and assessing audit risk whilst others' views it as less effective. The mean value of 2.73 indicates that AI tools can be modified so that they will be an improvement in the usefulness of AI in detecting material misstatements and assessing audit risks.

This is in consistent with the findings of Allami(2020) that AI is capable of identifying risks as well as fraudulent transactions within the financial statements of a client in a swiftly and accurate manner. Yebi and Cudjoe (2022) reported that AI- auditing based tools are equipped to be able to identify data trends and patterns of any audited dataset be it structured or unstructured and this further enables AI to indicate any anomalies in the dataset therefore the auditors will give more attention the that high-risk area. Al-jaaidi *et al*, (2023) documented that risk assessment has been aided by AI-based tools making it easy for an audit to achieve its objectives.

From your experience, what are the challenges that have been encountered with the use of AI in auditing and how do you suggest these can be mitigated?

AI integration in audits have come with new challenges for the auditors despite all its usefulness. The participants are asked an open-ended question on the challenges that they are facing or have faced when auditing using AI and below is the summary of the major points gathered.

The majority of the participants report that AI integration in audits poses a threat to the data security. Cyber security risk now exists in the auditing industry after AI implementation as it has made it possible for an authorized person to have access to a client's sensitive information.

According to Allami(2020), AI is not capable of putting restriction to access data of a client and has the client information be available to every auditor and eliminating the company's responsibility of maintaining confidentiality.

The participants indicates that inherent risks are introduced after AI implementation and these risks makes it difficult for auditors to conduct the auditing procedures more effectively and efficiently. Another challenge encountered is that the models are a little bit complex to deal with making it complicated to auditors who doesn't enough skills to operate it well. Adeoye *et al,* (2023) reported that AI is not yet standardized hence there are risks of inconsistent data inputs leading to inconsistent audit reports. The results produced by AI are reported to be complicated to explain to the clients' shareholders and the management who doesn't have AI knowledge.

The participants give an emphasis that the AI models aren't as flexible as the human auditors hence they are difficult to integrate with the existing systems of a firm. In trying to integrate with the existing, AI implementation start up tends to be expensive. This aligns with the findings of Yebi and Cudjoe(2022) that when a firm starts to audit using AI, there is need to consistently invest in technology so that it integrates with the existing models and procedures.

The participants suggests that challenges brought by AI integration in auditing can be mitigated by training the auditors on how to operate using these technologies, modelling less complex AI-based tools, back up technologies, cutting edge encryption and upgrading the auditors' skills in decision making and critical thinking. All these ways of mitigating AI challenges are in consistent with that reported by Ghanoum and Alaba(2020).

4.10 Interview responses

Participants background information

Table 4.8: Interviewee background

	Auditor 1	Auditor 2	Auditor 3	Auditor 4	Auditor 5
ROLE	Entry-level	Audit senior	Audit partner	Audit associate	Middle-level
EXPERIENCE	2 years	10 years	15 years	7 years	4 years
PROFESSIONAL CERTIFICATE	Degree	ITC	CA	APC	Degree
DUTIES	Provides assistance in the audit process	Audit policies making and overseeing the process of auditing	Supervising the audit process	Reports the findings of an audit, conduct financial audits	Oversees the implementation of an audit schedule

Source: Primary data(2024

10 interview meetings were scheduled to discuss the impact of AI on audit quality and the work of external auditors with external auditors and partners and unfortunately only 5 were available to respond since they had busy schedules. The response rate attained is 50% and considered to be a good response rate enough to draw conclusions ranges from 5% up to 30%.

QUESTION 1

Has AI in auditing assisted auditors in attaining a higher level of work efficiency and effectiveness? And how?

The respondents were asked during the interview session their opinion on whether AI helps in improving work efficiency and effectiveness. Overall, the respondents viewed AI to be helpful in reducing the workload by automating several repetitive auditing tasks.

Auditor 3,*" AI has led to the decrease in human reliance as the audit tasks which required intensive human efforts have been automated. The need for intensive*

supervision and manual analysis of client's transactions as well as contracts have been eliminated".

Auditor 2,'' *AI for the past few years that l has been utilizing it in the auditing industry, I have observed that it helps us in the audit program and plan development thus reducing our workload".*

These observations are in consistent with that of Allami(2020) where the researcher documented that AI in auditing has eliminated the heavy reliance on human auditors to conduct the auditing procedures especially at the audit processing stage and helps in enhancing the auditors' professional care. Audit programs which previously required manual labor has been automated reducing the workload of auditors and at the same time increasing work efficiency (Kokina and Davenport, 2017 and Patel, 2023). It is agreed on by all the participating auditors that AI reduces tasks burden by automating and multi-tasking most of the substantive tests thus improving work efficiency and effectiveness. This is in consistent with Yebi and Cudjoe (2022)findings that substantive audit tasks are conducted by AI in a thoroughly and comprehensive manner and multiple stages of auditing are reviewed within a short period of time.

Although positive reviews are given on the impact of AI on the work of external auditors, most participants express concern on AI threatening their job security. The majority of the respondents feared that AI is going to replace them.

Auditor 5 said," *Yes we do appreciate the usefulness of AI when auditing but we not sure if we will stay relevant in this industry as it is noticeable that most tasks are now carried out by AI and developers are also in a quest to improve and advancing these systems".*

This response aligns with the position of Yebi and Cudjoe(2022) that AI has introduced new skills requirements and these requirements keeps on evolving as technology advances making it harder for auditors in future unable to keep up thus be irrelevant in the field.

QUESTION 2

Basing on your expert knowledge, is AI enabling you to complete high quality audits as compared to the traditional methods and how?

Audit reports are regarded as the product of an audit process and its relevance is only assessed by quality of the audit (Cahyadi, 2020). The integration of AI in audits is expected by auditing firms and other stakeholders to contribute to the improvement of audit quality. Audit quality assessment can be done using the framework of IAASB(2014) which identified three components namely input, process as well as output to be useful. With these components in mind, the author asked this question in trying to gather relevant and reliable information pertaining the impact of AI on audit quality. Participant's responses and views on the impact of AI on audit quality are summarized below

Auditor 1 emphasize that," *AI indicate areas of high risk within a client's business and further tests can be conducted on those areas. Far much better audit reports are produced by AI systems making it easier for auditors to conduct better data analysis and decision making thereby increasing audit quality."*

Auditor 2 said*," AI gives auditors room to focus more on aspects of an audit that requires critical thinking, decisions to be made and deeper analysis by automating repetitive tasks in an efficient and effective manner. The automation of some stages of an audit process leads to improved audit quality. "*

Auditor 3*," AI integration has positively impacted audit quality in such a way that it acts as a benchmark tool when analyzing general ledger transactions."*

This observation is in consistent with Allami(2020) that reviewed that AI is capable of analyzing data at the same time identifying irregularities within the client's financial reports that needs closer review. Ghanoum and Alaba(2020) that AI integration helps automate repetitive tasks giving auditors time to concentrate on the analytical aspects of an audit. It is observed that All responses give confirmation on the findings collected from the literature review. These observations are in

line with that of Adeoye *et al*, (2023) that the use of AI when auditing has a positive impact on audit quality.

QUESTION 3

How does AI integration in auditing impact the way of assessing risks and detecting material misstatements?

The participating auditors were interviewed on whether they consider AI to be helpful in identifying risks, material misstatements and fraud as the degree of audit quality rely on these. Audits of high-quality dependents on AI's ability to identify as well as address potential risks and misstatements.

All the auditors agrees that AI is useful in risk and material misstatement identification. The participating auditors emphasized that it is useful in identifying inconsistencies in complex data indicating data aspects that needs critical examination, therefore, the likelihood of fraud and errors are minimized.

Auditor 1 saying that, *" AI identifies patterns which indicates material misstatements and fraud."*

Auditor 4, *" More datasets are now examined making it possible to identify risks and reducing the likelihood of errors or fraud not detected."*

These observations are in consistent with Allami(2020) that AI enables it to be easy to identify high risk areas that requires additional testing and crosschecking. Issa *et al*, (2016) state that the use of AI reduces the chances of fraudulent activities, accounting information manipulation and misstatement not highlighted.

All in all, the participating auditors view AI to be useful in detecting material misstatements and as well as assessing areas of high risk. AI based tools has the capacity to detect those outliers beyond the human's ability but needs properly data input monitoring.

> Auditor 3," *Although AI is useful in detecting errors, these machines need to be monitored closely to reduce the chances of drawing conclusions from data which contains algorithms bias."*

This is in consistent with the findings of Henry and Rafigue(2021) that data must be firstly screened before usage because there are higher chances of introducing inherent risks that will make it impossible to detect misstatements and assess risks.

QUESTION 4

What are the necessary skills and competencies requirements that are essential in order for auditors to stay relevant in an AI- based environment?

Participants are required to suggest skills requirements which are essential in the auditing industry in order to compliment technology. A summary of the essential skills needed in an environment with an everchanging technological environment is given below

Recognized as one of the important skills required in this era of technology evolution are communication and collaboration skills. Participants pinpoints that effective communication with the firms' clients is now essential as most the manual tasks are now performed by AI and the human-to-human interaction is not yet part of its capabilities and is likely to never be part of its capabilities. The contents of an audit report need to be communicated effectively with those charged with governance (client's) to minimize disputes and also all the challenges that the auditors face when using AI also need to be communicated effectively to the data scientists or the IT gurus. This is in consistent with the findings Allami(2020) that since repetitive auditing tasks are automated, auditors now have to finetune their ability to communicate and collaborate effectively.

Continuous learning is also another essential skill suggested by the participants to be needed when working with technologies. These AI models changes from time to time that is the data scientists are remodeling AI tools in trying to make them carry out more tasks so in order for auditors to stay relevant they must be up to date with these technological changes by training as well as professional developments. This aligns with the findings of Allami(2020) that auditors today must be keen to learn about the new trends such as AI applications and machine learning knowledge in order to attain the objective of an audit.

The participants views data literacy as essential skills need for auditors that is it has now become essential to be able to read and understand unstructured and structured data as well as to understand programming languages such as SQL and python. Yebi and Cudjoe(2022) state that auditors can partner with AI providers as way of gaining more insight on how data is structured up to the level of being able to critically analyze data.

4.11 Chapter Summary

Data collected using questionnaires and interviews as research instruments has been presented in this chapter by utilizing SPSS 20.0, tables, pie charts and bar graphs. Data analysis is done by relating to the research findings of the researches conducted previously by other researchers. The summary of the research findings, conclusions and any recommendations on the impact of AI on audit quality and work of external auditors is to be presented on the next chapter.

CHAPTER V

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives an overview of the whole research including a synopsis of the findings presented and analyzed on the previous chapter. Evaluating the impact of AI on audit quality and the work of the external auditors was the primary objective of this research and the research findings are concluded in this chapter as well as recommendations and suggestions for future research.

5.2 Summary of the research findings

5.2.1 To determine the relationship between AI and audit quality and the work of externa auditors

In this era of rapid AI growth, it is to the researcher's attention that auditing firms are investing and adoption AI in auditing due to its capabilities of increasing efficiency, cost reduction, better utilization of scarce resource, analyzing big data and its general perceived usefulness thus a positive relationship.

5.2.2 To assess the impact of applying AI on the work efficiency and effectiveness of external auditors

The research findings show that AI has a moderate impact on the work of external auditors leaning more on the positive side. AI integration in audits increase the auditors' work efficiency and effectiveness by reducing the efforts and time required to carry out the auditing process as well as making it easier than before for the auditors to analyze data. Tasks that used to take the auditors' much time such as substantive testing has been automated. The research findings also indicate that AI is not threating the auditors' jobs but rather is complimenting the profession.

5.2.3 To investigate the effects imposed by AI on audit quality and factors leading to these effects

The research findings show that AI is moderately impacting audit quality leaving a room for improvement if auditors are to be experienced in using this new innovation in the future. Enhanced risk assessment, better data analysis, improved accuracy are the key drives to audit quality and they are also some of the advantages of AI integration in audits hence improving the quality of audits as compared to the traditional methods

5.2.4 To determine how AI- associated procedures impact material misstatement detection and audit risk assessment

This study findings show that AI is capable of studying data patterns and trends hence making it easy to identify anomalies. AI is also capable of identifying high risk areas or transactions and therefore making it easy for auditors to focus more on these areas. Material misstatements due to error or fraud within a dataset either structured or unstructured are unveiled by AI making it less likely for an auditor to pass a wrong audit opinion. If AI is to be adopted fully in developing economies, the impact will move from a moderate extent to a more positive extent.

5.2.5 To identify auditors' skills and competencies requirements that are needed when conducting audits in an AI-based environment and how audits can cope with these requirements

The research indicates that a shift on the skills and knowledge requirements occurred in the auditing industry making communication skills, technical skills, data literacy, AI and machine learning knowledge more relevant. The results show that auditors must be keen to continuously learn about the new innovation trends so that they stay relevant in the industry.

5.3 Conclusions

Objective 1:

This research indicates that there is a positive relationship between a proper application AI and audit quality and the work of externa auditors as it is helps in carrying out audits in this era of big data.

Objective 2:

The researcher concludes that AI is enabling auditors to attain an advanced level of work efficiency and effectiveness by lessening the auditors' burden through automation of audit procedures such as substantive testing, internal control testing and data extraction. In the near future AI will be capable of carrying out the whole auditing procedures but will never replace human qualities such as professional judgement and communication.

Objective 3:

It is noticeable that audit quality has significantly improved due the integration of AI in audits. Audit quality is likely to improve corresponding to an increase in the AI adoption levels and auditors' experience with AI.

Objective 4:

The ability of an audit to identify existing and potential risks within the accounts of a client and detecting anomalies has improved as the auditors are using AI-based tools to conduct audit procedures and is achieved within a limited space of time.

Objective 5:

The researcher notices that in order for auditors to stay relevant and enjoy the benefits of AI implementation in audits they need to acquire advanced technological skills and knowledge. The highly recommended skills and knowledge requirements includes critical thinking and problem solving, effective communication skills, technical skills and data interpretation.

5.4 Recommendations

Basing on the research findings, the researcher proposes the following recommendations;

- Auditing firms and auditors must be keen to invest in AI technologies considering its capabilities of improving the quality of audits and increasing the auditors work efficiency and effectiveness levels in this era of big data.
- It is essential for auditors to be educated on the inherent risks and challenges associated with the utilization of AI when auditing.
- Auditors are recommended to be trained to professionally carry AI–based auditing processes and not to resistant to the changes.
- Training programs must be designed so as to educate auditors on how to properly apply AI when auditing as well as to professionally interpret its findings
- Auditors must be willing to learn new technology developments so that they stay relevant in the auditing industry
- Auditors, accountants, managements and its shareholders are edged to embrace AI application considering the improvement of audit quality and work of external auditors witnessed.
- Those charged with governance are recommended to issue frameworks and regulations so as to govern the use of AI when auditing so that the users are secured and protected.

5.5 Further studies recommendations

The researcher recommends future studies to be conducted on the following;

- ✓ An investigation on the cost- benefit analysis of implementing AI on audits as a way of forecasting the future of AI technologies
- ✓ Researches can be conducted on other audit innovations such as cloud computing, machine learning and blockchain so as to fully illustrate how these technologies are impacting the work of external auditors and audit quality.
- ✓ Future researches can be conducted to reveal how each type of AI works when auditing and this has to involve AI experts as well as the auditors
- ✓ Researches can be conducted on the impact of AI on auditing using any of the local firms in Harare as case study.

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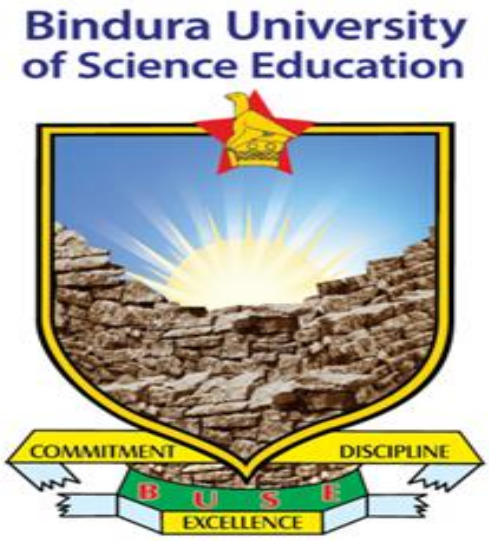
APPENDICIES

APPENDIX A COVER LETTER



Bindura University of Science Education

P. Bag 1020

Bindura

Dear Respondent

The investigator…… conducting a study on the impact of artificial intelligence on audit quality and the work of external auditors, Deloitte Zimbabwe being the case study is in her final year at Bindura University of Science Education. As part of the research procedure, the researcher is kindly seeking your assistance by filling in the research questionnaire attached and no personal details must be written down for confidentiality's sake.

Get in touch with me on my email address nyepuciliah@gmail.com or call on +263716674810 for inquires.

Thank you

Yours

…….

APPENDIX B

STUDY QUESTIONNAIRE

For close-ended questions, kindly highlight on the desired answer with a yellow highlighter and for the open-ended questions write clearly on the provided space.

After completion kindly forward the document to nyepuciliah@gmail.com

SECTION A: DEMOGRAPHIC INFORMATION

KINDLY TICK THE APPROPRIATE AGE RANGE

20 – 29 YEARS	30-39 YEARS	40-49 YEARS	50-59 YEARS	60 AND ABOVE

WORK (HIGHEST) QUALIFICATIONS	DEGREE	MASTERS	ITC	APC	CA
	☐	☐	☐	☐	☐

ROLE(POSITION) AT THE FIRM	ENTRY LEVEL	MIDDLE LEVEL	AUDIT ASSOCIATE	SENIOR AUDITOR/ PARTNER
	☐	☐	☐	☐

WORK EXPERIENCE	FROM 0 TO 5 YEARS	BETWEEN 6 TO 10 YEARS	BETWEEN 11 TO 15 YEARS	BETWEEN 15 TO 20 YEARS	21 YEARS AND MORE
	☐	☐	☐	☐	☐

SECTION B: AI ADOPTION AND THE AUDIT PROCESS

NB: KEY

1	2	3	4	5
To a very small extent	**To a small extent**	**To a moderate extent**	**To a large extent**	**To a very large extent**

In your view , does artificial intelligence has an impact on the quality of audits?

Yes ◯ **No** ◯

To what extent do you concur that the below listed elements has an impact/effect on audit quality and the work of external auditors

	1	2	3	4	5
AI Adoption levels					
Auditor's experience with AI					
AI auditing related procedures					
AI training to the auditors					

SECTION C: AI AND THE WORK OF EXTERNAL AUDITORS

What are the most significant benefits of using AI on work efficiency and effectiveness?

	1	2	3	4	5
Reduction in human efforts and time					
Implementation of the audit plan					
Automation of repetitive tasks					
Data analysis					

Are you going to say that AI based tools are a threat to the continuous availability of auditors' jobs ? please tick in the appropriate answer

Yes ◯ **No** ◯

Support your above opinion

……
……
……
……

SECTION D: AI AND AUDIT QUALITY

What are the most significant benefits of using AI on audit quality?

	1	2	3	4	5
Improved accuracy					
Increased efficiency					
Enhanced risk assessment					
Data analysis					

SECTION E: AI AND RISK ASSESSMENT AND AUDIT RISK DETECTION

How effective do you find AI in assessing audit risk and detecting material misstatements?

1	2	3	4	5

SECTION F: RECOMMENDATIONS AND CHALLENGES

What are the necessary skills and competencies requirements that are essential in order for auditors to stay relevant in an AI-based environment?

……
……
……

From your experience, what are the challenges that have been encountered with the use of AI in auditing and how do you suggest these can be mitigated?

……
……
……
……

THANK YOU FOR YOUR PARTICIPATION!!!

INTERVEW GUIDE

1. What is your own understanding of automating audit process and may you explain a factor or two that led to audit automation at Deloitte Zimbabwe?
2. Basing on your expert knowledge, is artificial intelligence enabling you to complete high-quality audits as compared to the traditional methods and how are these audits performed?
3. In your opinion, is artificial intelligence going to replace human auditors or it is going to complement auditors?
4. How does AI integration in audit process impact the way of assessing risks and detecting material misstatements?