COMPUTER ASSISTED AUDIT TECHNIQUES AND AUDIT EFFICIENCY IN NIGERIA

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CHAPTER ONE

1.1 Background of the Study

Today, audit efficiency is a major concern, especially in Nigeria's fast-changing financial scene. Audit efficiency is all about how well auditors can do their job, making sure financial reports are accurate and finished on time. Some key signs of audit efficiency include how long audits take, time spent on specific tasks, and any drop in overall audit time thanks to tools like ComputerAssisted Audit Techniques (CAATs). Also, looking at how much automated tools are used and how they cut down on process times gives a clearer picture of how audits are improving.

An audit is basically a process where evidence is gathered and evaluated to check if what companies say about their financial activities matches certain standards. The goal is to give stakeholders some confidence that financial statements are accurate.

Computer-Assisted Audit Techniques (CAATs) are tools and software that help auditors analyze data, test controls, and check financial info. CAATs are a diverse arsenal of software tools and techniques that leverage the power of technology to scrutinize and analyze entire populations of data instead of limited samples, significantly increasing the likelihood of detecting irregularities (Messier et al., 2017), Uncover hidden patterns and anomalies by Identifying suspicious transactions, inconsistencies, and potential red flags that might escape the human eye in manual audits (AICPA, 2023), Automate routine tasks and free up valuable resources: Streamlining time-consuming procedures like data gathering and verification, allowing auditors to focus on higher-level analyses and judgment-driven decision-making (Omonuk & Oni, 2015). They allow auditors to handle large amounts of data quickly and accurately by using methods like data extraction and statistical sampling. It also enhances audit quality and accuracy by providing stronger evidence and support for findings, ultimately contributing to greater confidence in the reliability of financial statements (Mustapha & Lai, 2017).

CAATs have really changed the game for auditing. These methods include a variety of software tools that help with everything from analyzing data to assessing risks and creating reports. In Nigeria, using CAATs has led to some solid results. For example, Ezeonwuka et al. (2024) found that using Generalized Audit Software (GAS) really boosted audit efficiency for internal auditors in the country. The study pointed out that things like communication, teamwork, and training play a big role in how well auditors can adopt GAS and improve efficiency.

CAATs help make audits more efficient by automating regular tasks so auditors can concentrate on the areas that carry more risk. When used properly, these techniques can broaden the audit's coverage and provide deeper insights, improving how effective the audit process is overall.

Therefore, exploring the role of CAATs in boosting audit efficiency within the Nigerian context becomes not just relevant, but crucial. This study delves into the transformative potential of these techniques, examining their impact on audit processes, accuracy, and ultimately, the robustness of the nation's financial landscape.Still, there are challenges when it comes to getting CAATs widely used in Nigeria. According to Olabisi et al. (2018), while CAATs can boost efficiency, their acceptance depends on the auditors and the company environment. Plus, Oladejo and Adeyemo (2017) stressed the importance of ongoing training so auditors can make the most of CAATs. This study will examine CAATs like Parallel simulation and normative practices, snapshot survey, data continuous monitoring, and data extraction and analysis, and their relevance in the efficiency and quality of audit in financial institutions.

With all this in mind, this study will look into how Computer-Assisted Audit Techniques affect audit efficiency in Nigeria. By checking out how these tools are used and their effectiveness and efficiency, the study aims to give a clearer understanding of their impact on audit processes.

The results should provide useful insights for those looking to improve audit quality, meet regulations, and build trust in financial reporting in Nigeria.

1.2 Statement of the Research Problem.

Computer-Assisted Audit Techniques (CAATs) are known worldwide for making audits more efficient by automating tasks and analyzing data. But in Nigeria, their use isn't as widespread or effective (Olabisi et al., 2018). Even though tools like Generalized Audit Software can really speed up audits and make them more accurate (Ezeonwuka et al., 2024), many audit firms in Nigeria face challenges like lack of training, resistance to new methods, and tech issues (Oladejo & Adeyemo, 2017). The research problem this study investigates is the void in accounting literature on the use of CAATs and its impact on audit quality in developing countries. If computerized accounting is seen as a problem to auditors, it would mean that auditors will have a hard time detecting material misstatements due to error and fraud in the financial statements.This situation raises questions about whether Nigerian firms are getting all the benefits CAATs can offer. This study is primarily motivated by the fact that Nigeria being the largest economy in the African continent has many large businesses that have computerized their accounting systems. It is interesting to investigate whether auditors effectively use CAATs to audit computerized accounting systems in that setting. Plus, there are not many studies examining how CAATs actually affect audit efficiency here, which makes it tough for stakeholders to decide on their use. Furthermore, challenges such as inadequate technological infrastructure, resource constraints, and unclear regulatory frameworks may hinder the full realization of CAATs' potential (Tekbas, IFAC, 2018). Therefore, a thorough investigation into the current state of CAATs adoption in Nigeria is urgently needed. So, this study aims to explore how CAATs impact audit efficiency in Nigeria, hoping to fill this knowledge gap and offer practical tips for improving audit practices in the country.

1.3 Research Questions.

This research work is done to answer the following questions:

1. How does the integration of snapshot survey as a tool of Computer Assisted Audit Techniques influence audit timeliness and efficiency?

2. Does the implementation of parallel simulation and Normative Auditing practices enhancethe reliability and accuracy of Audit in Nigerian financial institutions?

3. To what extent does the utilization of data extraction and analysis techniques withinComputer Assisted Audit Techniques contribute to improved audit efficiency in Nigerian organizations?

4. How does the application of data continuous monitoring techniques as a part of Computer Assisted Audit Techniques influence the cost effectiveness of audit in Nigeria?

1.4. Objectives of the study

The main purpose of the study is to look into how Computer Assisted Audit Techniques affect the efficiency of Audit in Nigeria. The specific goals are to:

1. Explore how the integration of snapshot survey enhances audit timeliness and efficiency.

2. Examine whether the implementation of parallel simulation and normative audit practice enhances audit accuracy and reliability in Nigerian financial institutions.

3. Evaluate how techniques for extracting and analyzing data from various sources contribute to improving audit quality in Nigeria

4. Analyze how the application of data continuous monitoring techniques as a part of Computer Assisted Audit Technique facilitates a more efficient and cost conscious audit process in Nigerian contexts.

1.5. Research Hypothesis

The research hypothesis is stated in the null form. These hypothesis are formulated in line with the specific objectives as follows:

1. Snapshot survey

H1: Utilizing snapshot surveys as a Computer Assisted Audit Technique tool will not result in more reliable audit evidence gathered in Nigerian businesses compared to traditional methods.

2. Parallel simulation and Normative Auditing

H2: Implementing parallel simulation and normative auditing practices, facilitated by Computer Assisted Audit Techniques, does not enhance the efficiency and accuracy of audits conducted in Nigerian financial institutions compared to traditional methods.

3. Data Extraction and Analysis

H3: There is no significant relationship between the utilisation of data extraction and analysis technique as a Computer Assisted Audit Technique tool and Audit efficiency in Nigeria.

4. Data Continuous monitoring

H4: The application of data continuous monitoring techniques as part of Computer Assisted Audit Technique will not lead to a more cost-effective audit process in Nigerian contexts compared to traditional periodic reviews.

These hypotheses provide a framework for testing the relationships between specific Computer Assisted Audit Technique applications and audit efficiency. The research will aim to collect data and analyze results to either support or refute these initial propositions.

1.6 Significance of the study.

This study is important because it evaluates how Computer-Assisted Audit Techniques (CAATs) impact audit efficiency in Nigeria. In today's world, where technology is changing how things are done, it is important for audit firms to use the modern day tools, to enhance and improve the

quality of their work. The research will help audit firms understand how CAATs can make their processes smoother, more accurate, save time and money. It will also remind audit professionals of the need to embrace technology and keep up with global best practices.

For policymakers and regulatory bodies, this study provides useful information for creating frameworks that support the use of CAATs. It points out areas where support is necessary—like training, infrastructure, and incentives—to encourage a more tech-focused audit scene. Also, this research has the potential to revolutionize Nigerian auditing. By understanding how CAATs improve factors like timeliness, cost-effectiveness and resource utilization, we can equip firms with practical solutions to overcome data complexities and enhance audit quality. This, in turn, strengthens regulatory compliance and fosters trust in the financial system.

1.7 Scope of the study.

This study examines how Computer-Assisted Audit Techniques (CAATs) affect audit efficiency in Nigeria. It focuses on both public and private audit firms, especially medium and large scale that are more inclined to use tech tools in their work. The research relies on primary data through the administration of structured questionnaire with selected respondents.

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CHAPTER 2

LITERATURE REVIEW

2.1 Conceptual Review

This chapter takes a close look at current research on Computer Assisted Audit Techniques (CAATs) and how they impact audit efficiency, especially in Nigeria. The goal here is to lay out the key ideas and evidence related to the topic, while also pointing out areas where more research is needed. It comprises three reviews: conceptual, theoretical, and empirical

As technology continues to reshape the way accounting and auditing work, auditors are now expected to use digital tools to boost quality and efficiency (Appelbaum, Kogan & Vasarhelyi, 2023). CAATs, which include things like data extraction tools and automated testing apps, have become very essential for improving audit performance in today's complex data world.The chapter begins with some conceptual explanations of CAATs and audit efficiency. Then, it lays out the theoretical framework for the study, followed by a review of relevant empirical literature from both global and Nigerian viewpoints. The chapter concludes with a summary of findings, a look at research gaps, and reasons for pursuing this study.

2.1.1. Concept of Computer Assisted Audit Techniques (CAATs)

Computer Assisted Audit Techniques (CAATs) refer to the use of specialized computer software and tools by auditors to facilitate the audit process, particularly in the examination and analysis of electronic data (Appelbaum et al., 2020).They are tools and techniques used for automatic audit and enhances audit procedures. It helps auditors to handle complex and large volume of data, improve the accuracy and efficiency of Audit quality, and improves audit coverage. They have become very essential in today's audit practice due to the growing complexity and digitilization of financial records.

The evolution of CAATs aligns with broader advancements in data analytics, artificial intelligence, and machine learning, which are increasingly integrated into audit procedures to enhance the efficiency and scope of audits (Kokina & Davenport, 2021). It signifies a shift towards more proactive, intelligent, and comprehensive auditing approaches, fundamentally transforming the role and impact of auditing in the years to come (Spiros, A. 2016). In many places, audit regulators and professional bodies encourage the use of CAATs to meet the 8 demands of modern auditing standards and to respond to the complexities of big data environments. CAATs include a variety of tools and methods, each serving its own purpose.

Here's a quick overview of some common uses:

2.1.2. Snapshot survey: A snapshot survey is a method in the integrated modes of the audit systems that captures in information systems an "image" of treatment. These pictures register the status and data in the specific points, allowing you to verify that the data is processed and

managed in the system. It entails the photographing of the computer memory using specialized devices, during the execution of programs. A series of such photographs will enable the auditor to recreate the sequence of program procedure in order to carry out an analysis regarding the correctness. It is a technique that requires an advance technical facility and knowledge to interpret the result of the analysis.

2.1.3. Parallel simulation and Normative Auditing: This method is about creating models of applications that auditors need to check. These models are done on a computer and show how the application works from the auditor's perspective. The auditor uses real data to run the model alongside the actual system. Then, they compare the results from both to prepare a report, which might point out any differences that need more testing.

Typically, the auditor's model is based on standard operating procedures, so that's why we call it normative. This approach checks how specific programs are running right now and verifies certain values in the computer records. The real benefit comes from using parallel simulation and normative auditing together with CAATs. Parallel simulation helps spot any unusual trends, while normative auditing serves as a standard for what's normal. This way, auditors can find problems and also understand how serious those issues are according to industry standards.

2.1.4. Data Extraction and Analysis: Computer-Assisted Audit Techniques (CAATs) are really useful tools in today's auditing world, especially when it comes to extractingand analyzing data.

They allow auditors examine all kinds of data quickly and identify any oddities, trends, or potential fraud risks. When it comes to data extraction, auditors can get relevant datasets from different systems like ERP platforms, databases, and accounting software. Tools like IDEA, ACL, and CaseWare help auditors grab this data safely while keeping the original data intact.

Once the data is extracted, auditors can use CAATs for analysis to do various checks like trend analysis, finding outliers, and fraud detection. These tools help with looking at large numbers of transactions fast. For instance, CAATs can perform Benford's Law analysis to find unusual numerical patterns that might point to fraud. Some CAATs even offer real-time monitoring, so transactions can be checked as they occur. This feature allows auditors to respond quickly to any

breaches or risky activities. Overall, these tools really boost how effective audits are and cut down the time needed for manual checks.

2.1.5. Data Continuous monitoring: Some CAATs offers the ability to monitor important controls and transactions in your organization's systems all the time. This helps you spot potential problems right away, so you can handle risks better. Unlike old methods that only give you snapshots, continuous monitoring gives you real-time insights by looking at data from your apps, networks, and devices constantly. This way, you can catch performance issues before they affect your work, identify security threats before they get worse, and tackle compliance problems before they turn into violations. It's not just about protecting information; it's also about making smarter decisions, improving performance, and keeping everything secure while following the rules. Continuous monitoring turns data from something you just look at into a helpful tool for managing things and making ongoing improvements.

The advantages of CAATs are numerous. They allow auditors to test 100% of data rather than rely only on sample-based testing, which increases the reliability of audit conclusions (Owolabi & Dada, 2023). Additionally, CAATs reduce audit time, enhance fraud detection capabilities, and support continuous auditing. However, the adoption of CAATs is not without challenges. These include the high cost of acquisition and maintenance, steep learning curves, and the need for ongoing training and IT support (Izedonmi & Ibadin, 2022), loss and corruption of data during it's application, and many others.

In Nigeria, the awareness and use of CAATs are gradually increasing, particularly among the Big Four audit firms and some large indigenous firms. Nonetheless, small and medium-sized audit practices still face significant barriers in integrating CAATs into their workflows due to limited resources and technical knowledge (Adewuyi & Olamide, 2023). The effective implementation of CAATs in such contexts requires strategic investment, regulatory support, and continuous professional development.

Furthermore the factors to consider in deciding whether or not to use CAATs includes the computer knowledge of the auditor, availability of CAATs and suitable computer facilities, the effectiveness and efficiency of CAATs, the time available to perform the audit, impracticability of

manual test where input documents are nonexistent and where the EDP system does not produce a visible audit trail of transactions processed or where outputs are not produced etc.

2.2. Concept of Audit Efficiency

Audit efficiency refers to the ability of the external auditor to accomplish the audit task in less time and with lower fees, thereby maintaining profitability (Bamber et al., 1993; Pincus et al.,1999). Audit efficiency is the ability of auditors to achieve audit objectives using less time efforts, and resources while maintaining the required audit quality. Audit efficiency is a measure of how effectively audit inputs such as manpower, technology, and procedures, are converted into audit outputs, such as timely and reliable reports (Appelbaum et al., 2020). In the context of increasingly complex and data-intensive environments, enhancing audit efficiency has become a key performance goal for audit firms worldwide. Audit efficiency is influenced by different factors, including the auditor's experience and skill level, the complexity of the audit assignment, the degree of client cooperation, the quality of internal controls, and most importantly, the availability and use of advanced audit technologies such as CAATs (Yoon et al., 2021). In this regard, the integration of CAATs is seen as a big help for getting audit work done faster and more efficiently , especially in large-scale audits where manual procedures would be time-consuming and less effective.

Efficient auditing involves optimizing processes such as data collection, risk assessment, testing, and reporting, without compromising compliance with regulatory standards or professional guidelines. According to Ghosh and Warren (2022), efficiency is achieved not only through procedural streamlining but also by leveraging technological tools that automate routine tasks and improve decision-making speed.

Key performance indicators (KPIs) for measuring audit efficiency include: Time taken to complete audit assignments, cost per audit engagement, rate of resource utilisation, number of audit findings per unit of time or effort and turnaround time for audit reports (Schmidt & Wood, 2021).

2.2.1 Benefit of Audit Efficiency

1. By focusing on critical areas and utilizing efficient methods, auditors can gain deeper insights and potentially identify issues that might be missed through less efficient approaches, thereby increasing audit quality.
2. Reduced audit costs: Efficient use of resources minimizes the overall cost of conducting an audit, benefiting both the audit firm and the client.

3. Efficient audits get completed within a reasonable timeframe, allowing timely reporting and addressing any identified issues promptly.

4. It improves client satisfaction: Clients benefit from efficient audits due to lower costs, timely completion, and potentially improved audit quality.

5. Minimized Disruption: Shorter audits mean less disruption to daily operations, allowing organizations to focus on their core business activities.

6. Stronger Governance: Efficient audits contribute to good corporate governance by ensuring the accuracy and integrity of financial reporting, promoting transparency and accountability.

7. A successful and efficient audit instills greater confidence in the organization's financial health for investors, creditors, and management alike.

2.2.2 Strategies for enhancing audit efficiency

1. Effective planning and scoping: Clearly defining the audit objectives and scope upfront, lays the foundation for efficient resource allocation.

2. Risk-based approach: Focusing on areas with higher inherent and control risks, ensures auditors spend time on the most critical aspects of the engagement.

3. Utilising CAATs: Leveraging computer-assisted audit techniques automates tasks and facilitates efficient data analysis.

4. Continuous improvement: Audit firms should constantly evaluate and refine their processes to ensure ongoing efficiency improvements

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5. Clearly Defined Scope: Detailed planning and a well-defined audit scope from the beginning, minimize the risk of scope creep and wasted effort.

6. Collaboration is Key: Building strong relationships with clients and fostering open communication throughout the process, helps ensure timely access to information and reduces resistance.

7. Develop Skilled Teams: Investing in training for auditors on efficient methodologies and data analysis techniques can significantly improve their effectiveness.

8. Flexibility and Adaptability: Being prepared to adapt to unforeseen circumstances and adjust the audit approach as needed is critical for maintaining efficiency.

It is important to distinguish between audit efficiency and audit effectiveness. While efficiency focuses on minimizing inputs and maximizing outputs, effectiveness relates to the extent to which audit objectives—such as accuracy, reliability, and compliance—are achieved (Izedonmi & Ibadin, 2022). Both dimensions are crucial, and in practice, audit efficiency must be balanced against the need to maintain audit quality and integrity.

2.3. Relationship between CAATs and Audit Efficiency

The relationship between Computer Assisted Audit Techniques (CAATs) and audit efficiency has become a hot topic lately as audit firms look to improve their game while tackling the growing complexity of data and regulatory requirements. CAATs are seen as handy tools that can make the audit process smoother, cut down on audit times, and boost the quality of results, all of which help efficiency. One way CAATs help is by automating data extraction and analysis, which used to take up a lot of time during audits. Tools like ACL and IDEA let auditors work with whole datasets instead of just sampling, which speeds up finding any odds or mistakes. This full population testing means auditors cover more ground without having to do as many manual

checks.

Experts also say that CAATs improve efficiency, by making risk assessment and planning better. By looking at past data and transaction trends, auditors can zero in on the risky areas, which helps them use their resources more wisely. This way, they spend less time on areas that has low risk, making their overall work more effective.

Research shows that using CAATs is linked to better audit efficiency. For instance, a study found that Nigerian audit firms using CAATs had shorter audit cycles and got their reports out faster compared to those sticking to older methods. Other research highlighted how using audit software helped mid-sized firms cut down on manual tasks and boost staff productivity.

That said, the level of efficiency gained from CAATs can depend on things like staff skills, management backing, and technological infrastructure. If there's no proper training or investment in supporting systems, the benefits of CAATs might not be seen fully. In Nigeria, bigger firms can make CAATs work well because they have the resources, while smaller ones often face challenges due to technological and budget issues.

Also, using CAATs strategically can boost audit efficiency in certain sectors. For example, government audits and banking audits in Nigeria have performed better after adopting CAATs, especially in decreasing backlogs and creating real-time audit trails.

In summary when put to good use, CAATs have a positive relationship with audit efficiency. Automating tasks, improving data management, and focusing on risks are key ways CAATs help. But to really enjoy these benefits, firms need to invest in training, technology, and being ready for change.

2.4 Theoretical Review

While a number of theories have been employed to illustrate the relationship between CAATs and audit efficiency, we choose the Unified Theory of Acceptance and Use of Technology (UTAUT) model as it incorporates constructs from several prominent theories. These theories are Theory of Acceptance Model (TAM) (Davis 1989), contingency theory, and performance expectancy theory.

UTAUT proposes that four factors influences user acceptance: (1) user expectations about systems' performance, (2) users' performance about the effort needed to use the new system (i.e

effort expectancy), (3) users' perception whether individuals important to them encourage system use (i.e social influence), and (4) users' expectations regarding the existence of an organisational and technical infrastructure to support system use (i.e facilitating conditions).

2.4.1 Theory of Technology Acceptance Model (TAM)

The Theory of Technology Acceptance Model (TAM) provides a valuable framework for understanding why auditors might adopt and utilize CAATs, ultimately leading to increased audit efficiency. Here's a deeper dive into TAM and its specific elements:

1) Perceived Usefulness:

Auditors need to believe CAATs address their specific audit tasks effectively. For example, if a CAATS automates data extraction for testing inventory controls, it's perceived as more useful than a tool focused on financial statement analysis if the audit primarily involves inventory valuation. The ability of CAATs to identify anomalies and potential fraud that might be missed through manual procedures increases perceived usefulness. Auditors see the technology as a valuable tool for uncovering hidden risks and improving audit quality. CAATs can generate insightful reports and visualizations that aid auditors in making informed decisions throughout the audit process. This enhances perceived usefulness by supporting auditors in judgment and risk assessment.

2) Perceived Ease of Use:

A well-designed and intuitive interface with clear instructions and functionalities is crucial for ease of use. This lowers the learning curve and encourages auditors to adopt CAATs more readily. Providing comprehensive training programs on using CAATs equips auditors with the necessary skills and knowledge to leverage the technology effectively. This training should address not only technical aspects but also how to interpret results within the audit context.

Readily available technical support helps auditors overcome challenges and troubleshoot any issues that arise while using CAATs. This ongoing support system enhances perceived ease of use and fosters user confidence.

TAM acknowledges the influence of external variables on technology acceptance. In the context of CAATs, these might include:

a) **Organizational Culture**: A culture that values innovation, continuous learning, and technological advancement is more likely to encourage the adoption of CAATs.

b) **Management Support**: Strong support from management for CAATS implementation, including budget allocation and training resources, sends a positive message and motivates auditors to embrace the technology.

c) **Social Influence**: Positive experiences and recommendations from colleagues who have successfully used CAATs can influence individual perceptions of usefulness and ease of use.

By understanding these TAM elements and external influences, organizations can create an environment that promotes the adoption and effective use of CAATs, ultimately leading to improved audit efficiency. It's important to acknowledge that TAM has limitations. It primarily focuses on individual user perceptions and doesn't fully account for organizational factors or the specific context of an audit engagement.

2.4.2 Performance expectancy Theory

Expectancy theory (or expectancy theory of motivation) proposes that an individual will behave or act in a certain way because they are motivated to select a specific behavior over others due to what they expect the result of that selected behavior will be.[1] In essence, the motivation of the behavior selection is determined by the desirability of the outcome. However, at the core of the theory is the cognitive process of how an individual processes the different motivational elements. This is done before making the ultimate choice. The outcome is not the sole determining factor in making the decision of how to behave.

Expectancy theory is a motivation theory concerned with mental processes regarding choice, or choosing. First proposed by Victor Vroom of the Yale School of Management in 1964, it aims to

explain the processes that an individual undergoes to make choices. In relation to the study of organizational behavior, the theory stresses "the need for organizations to relate rewards directly to performance and to ensure that the rewards provided are deserved and wanted by the recipients". It is a degree to which an individuals beliefs that using a particular technology will enable them achieve better results in their job. If auditors perceive that using CAATs will improve their performance (i.e., detect fraud more easily, analyze data quicker), their performance expectancy is high. Also, As auditors use CAATs more effectively, their audits

become more efficient; faster, more accurate, and less labor-intensive.So, performance expectancy acts as a motivational bridge between CAAT adoption and audit efficiency.

2.4.3 Contingency Theory

Contingency theory argues that there's no "one-size-fits-all" solution when it comes to management practices. The effectiveness of a particular approach, like implementing CAATs, depends on the specific context of an organization and the nature of the task at hand. Here's a closer look at how contingency theory applies to CAATs and audit efficiency. The Key Factors Influencing Impact are:

1. **Organizational Size and Complexity:** Larger firms with complex data sets typically have more to gain from CAATs. They can automate high-volume data processing tasks and leverage advanced analytics capabilities for deeper insights, leading to significant efficiency gains. For smaller firms with less complex data structures, the cost-benefit analysis of CAATS implementation might be different. They may need to prioritize cost-effective solutions or focus on adopting CAATs for specific high-risk areas.

2. **Task Complexity:** CAATs are particularly beneficial for audit procedures involving repetitive tasks like data extraction, reconciliations, and calculations. Automating these tasks frees up auditors for higher-level analysis and judgment-based procedures. For less routine or judgment-intensive tasks, the benefits of CAATs might be less pronounced. Auditors may need to exercise more professional skepticism and rely on their experience to assess complex situations.

3. **Auditor Expertise:** A team with strong technical skills and knowledge of CAATs can leverage the technology effectively. They can design appropriate data queries, interpret results critically, and integrate findings seamlessly into the audit process, leading to greater efficiency gains. A lack of expertise in using CAATs can hinder their effectiveness. Auditors might struggle to utilize the technology's full potential, potentially leading to wasted time or misinterpretations.

4. **Additional Considerations:** The appropriate level of standardization for CAATS usage depends on the context. Standardized procedures might be efficient for large, repetitive audits, while customized approaches might be necessary for complex or unique engagements.

Contingency theory emphasizes the importance of data quality and security. Organizations need to have robust data governance practices in place to ensure the integrity of data used with CAATs. Inaccurate or unreliable data can lead to misleading audit findings and undermine efficiency gains. For optimal efficiency, CAATs should be seamlessly integrated with existing audit methodologies. This ensures workflows are optimized and auditors can leverage the technology effectively throughout the audit process.

By considering these contingency factors, organizations can develop a more tailored approach to implementing CAATs. Focusing on areas where the technology offers the most significant efficiency benefits based on the specific context of the audit engagement will maximize its positive impact.

Contingency theory, when combined with frameworks like TAM, provides a richer understanding of how CAATs influence audit efficiency. It underscores the importance of considering both individual perceptions and organizational context to achieve optimal results.

2.5 Review of Previous Studies

Empirical analysis or review is an evidence based approach to a study and interpretation of information. It requires evidence to prove any theory. It is an important aspect of research

which enables the researchers to discover what has been done in specific area of research. It also helps the researcher to be familiar with the state of knowledge in the area being studied. (JB Omonuk, AA Oni, 2015) Most business organizations world-over have computerized their accounting systems. Extant literature finds that the use of Computer Assisted Audit Techniques (CAATs) is positively related to the quality of audit reports. CAATs are widely applied to audit financial statements in developed countries. However, there is a void in literature about the audit of computerized accounts in developing countries. We draw a sample from Nigeria to investigate the following questions, "Do auditors effectively audit computerized accounts and; Is there a positive relationship between the use of CAATs and audit quality?" Using descriptive statistics, correlation analysis and logistic multiple regression, we provide evidence that:(1) CAATs are effectively used, (2) there is a positive relationship between the use of CAATS and

audit quality, and (3) in a sample. (Hauwa Alfa Mohammed et al, 2023) Computer assisted auditing techniques (CAATs) have been identified as a necessary and sufficient conditions for an effective and qualitative audit report. This study analyzed the determinants of adoption of computer assisted auditing techniques with focus on auditors practicing in Kano, Nigeria. The study adopted survey method where 125 auditors were sampled from seventeen audit firms through a multi-stage sampling technique. The data was analyzed using econometric methods (Ordered Logit Regression) in line with the Unified Theory of Acceptance and Use of Technology (UTAUT). Performance expectancy and effort expectancy were found to be statistically significant determinants of auditors' total intention to CAATs adoption and usage. However, facilitating condition and social influence were not significant in explaining the auditor's total intention to CAATs adoption and usage. The study recommends that, audit firms should invest in technological tools and train auditors on computer tools. Also, the regulatory bodies should consider computer proficiency as part of the regulatory checks. This adoption and usage of CAATs will help the auditors to produce an effective and qualitative audit report.

(Olarewaju David Adeyanju et Olayinka Adenikinju) Businesses across the world have seen tremendous changes as a result of information technology and have drastically altered the way transactions are documented, tracked, and reported in the accounting profession. The study investigated the influence of Computer Assisted Audit Tools and Techniques (CAATTs) on fraud detection in Nigerian Deposit Money Banks. Survey research design was adopted and a structured questionnaire was used to gather data from respondents through a conveniently sampling technique. 198 auditors and managers in the big-four audit firms and the twenty listed deposit money banks, were sampled. The data gathered was presented using descriptive statistical tools (frequency and percentages) and analyzed using the Partial Least

SquareStructural Equation Modeling (PLS-SEM), with the aid of the SmartPLS-3 software. The result of the analysis revealed a significant and positive effect of CAATTs components on fraud detection (β= 0.458, t= 6.172, p< 0.05). The study concluded that CAATTs significantly influence the detection of fraud, among Deposit Money Banks in Nigeria. Therefore, it was recommended that stakeholders should implement policies that will drive the use of CAATTs for forensic auditing activities in the Nigerian banking sector. Furthermore, the government should support the efforts of the banks in fighting fraud by facilitating whistle-blowing policies and encouraging the creation of fraud-hotlines in the banks.

(Anthony Jioke Ezeonuwa et al 2024) The importance of Generalized Audit Software (GAS) and its benefits have been studied in developed countries. However, the benefits of GAS are not as widely researched in developing countries like Nigeria. This study was designed to investigate the efficiency of adopting GAS in internal auditing in Nigeria. The study employed the use of

questions in questionnaires which were used to gather information from 120 internal auditors at 12 different firms within Nigeria. The Data was analyzed using the Principal Component Analysis (PCA). It was found that factors such as resource constraints, communication and collaboration, and training of internal auditors affected the adoption of GAS, thereby limiting its efficiency in Nigeria. The study also found that GAS adoption can improve and increase the efficiency of internal auditors in Nigeria. The study recommended the need to enhance communication and collaboration among GAS users as well as other key stakeholders in Nigeria.

(Aizuddin Abdul Ghani, et al 2024) Determinants of the adoption of CAATs in the Internal Audit Departments are examined in this study by employing the Unified Theory of Acceptance and Use of Technology (UTAUT). The attributes that were taken from the UTAUT theoretical model are performance expectancy, organisation readiness, effort expectancy and social influence. Apart from UTAUT's attributes, this study has taken individual factors to be examined together with the model. They are also considered an external factor that was established through the Theory of Acceptance Model (TAM) in previous literature. Using a quantitative approach, questionnaires were administered to internal auditors, followed by IT auditors and others such as Compliance officers and Quality auditors who use CAATs in their routine tasks; they work in multinational companies, government link companies and government agencies. The companies were chosen because they have in-house Internal Audit Departments. The results show that performance expectancy and individual factors are the most supported attributes that influence the adoption of

CAATs. This study offers insights into the effect of individual factors on CAATs adoption. This paper expands the existing literature on factors that influence CAATs adoption among internal auditors.

(Ahmad Marei, EDTBM Iskandar 2019) Majority of current businesses are shifting towards adopting computerized accounting information systems. This trend tends to have effects on the performance of IT audit, financial reports audit and tracing esource documents. The adoption of CAATs as audit technologies enables auditors to carry out effective and efficient IT audit work performance and to mitigate audit time. The objective of this study is to examine the performance expectancy that influence the computer assisted auditing techniques (CAATs). (Robert L Braun, Harold E Davis 2003) In light of the increasing demand on auditors to make the audit more effective and efficient, this paper presents a brief summary of the most prominent computer assisted audit tools and techniques (CAATTs), which auditors can use to increase audit

efficiency and effectiveness. Additionally, the results of a survey of governmental auditors which inquired about their perceptions of a specific type of CAATTs (generalized audit software proxied by the use of Audit Control Language or ACL) are presented. Results show that auditors seemed to perceive the potential benefits associated with ACL; however, they displayed a lower confidence in their technical abilities in using the application. Also, the auditors surveyed expressed a desire to increase their skills through increased ACL training. Taken together, these results give audit decision makers evidence that additional technical training is needed and desired by auditors. (Ebrahim M Mansour, 2016) Despite the efforts of auditing professional bodies to help stimulating the application of contemporary audit technologies among audit firms to cope with the rapid growth in information technology usage among business

organization, the extent to which Jordanian external auditors and alongside the world's trend have accepted Computer Assisted Auditing Techniques (CAATs) remains fairly low. This study use the Unified Theory of Acceptance and Use of Technology (UTAUT) to explore this lack of CAATs' usage in Jordan and try to find answer to what factors may affect their adoption and acceptance. The study has drawn upon qualified questionnaire sent to 200 statutory external auditors to obtain the data. With a response rate over 80%, the results of the statistical analysis revealed that Jordanian external auditor's intention to adopt CAATs may be driven by both

auditor's performance expectancy and firm's facilitating conditions issues. However, effort expectancy and social influence at the other spectrum may not play such a major role. These results have several practical implications. Jordanian audit firms can create a positive attitude amongst its auditors towards CAATs' usage by promoting CAATs benefits and usefulness, by decreasing efforts expectancy needed to use CAATs, and by further investing in management and technical infrastructure supporting CAATs. (Jagdish Pathak et al, 2005) Computer assisted audit techniques (CAATs) encompass a range of computerized techniques that internal and external auditors use to facilitate their audit objectives. One of the most important CAATs is generalized audit software (GAS), which is a class of packaged software that allows auditors to interrogate a variety of databases, application software and other sources and then conduct analyzes and audit routines on the extracted or live data. This study seeks to evaluate the nature and extent of the utilization of CAATs in financial institutions. In particular, the study establishes the extent and nature of use of GAS by bank internal auditors and their external auditors. The study is conducted with large local and international commercial banks in

Singapore, a major financial center. Given the limited research on GAS in general and in the financial services sector in particular, the study uses exploratory qualitative research.

Despite all the works done on the relationship between CAATs and audit efficiency, this study is still carried out because no study focused on Benin city Nigeria.

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CHAPTER 3 METHODOLOGY

3.1. Introduction

This chapter covered this research's methodology. That is, to examine the stated norms and methods that underpin this study and knowledge claims, method, population, sampling strategy, sample size, research design, data sources, data analysis and model formulation are evaluated.

3.2 Research Design

Research design normally is important for collecting and analyzing data in a way that data collected becomes relevance with a research purpose (Orotho 2003). The research design for the study is longitudinal in that it involves measuring the influence of explanatory variables on the dependent variables for a given set of data collected over a period of time.

3.3 Population of the Study

In research methodology, it is pertinent for a researcher to properly identify the population of interest (Ponto 2016). Therefore, the population of this study has been identified as elements from where the sample was drawn. Population is described as a group of people from where a researcher intends to find out a phenomenon (McCombes, 2021). The population of study comprises professional auditors (internal and external), and senior accounting staffs working within audit firms, corporate organizations, and government agencies in Nigeria particularly within Benin city. They are chosen because of their exposure and utilisation of CAATs in their audit procedures used in enhancing audit processes.

3.4 Sample Size and Sampling Technique

A sample is a proportion or subsets of the population. Random sampling technique was used for this study. The term ‘‘random sampling methodology’’ refers to a method of selecting a samples where each sample from the universe has an equal chance of being chosen. This is employed as it offers the study's population has an equal chance of getting chosen. Every member of the population has an equal chance of getting chosen, which is one of this method's best qualities (Wimmer & Dominick, 2006). In other to get the sample size for this study, Taro

Yamane (Yamane, 1973) formula was used. By using Taro Yamane (Yamane, 1973) formula, 90%

confidence level was applied.The calculation formula of Taro Yamane is presented as follows:Where;

n= the sample size N=

the finite population

e = the level of significant or limit of tolerable error

I = unit or a constant

By applying the Taro Yamane formula for determining sample size;

n = 90

Based on the sample size above, a total number of 100 questionnaires was administered because of the possibility of no return of questionnaires and possible invalids by respondent.

3.5 Sources of data

The nature of this study requires the utilization of primary data. Primary sources, as described by Agbonifoh and Yomere (1999), involve conducting original investigations to obtain data specifically for the intended purpose. Such primary data can be acquired through methods such as surveys, observations, and experiments.For this study, data were gathered via a survey approach, where questionnaires were distributed to respondents randomly.

3.6 Theoretical research instrument

For the purpose of this study, data will be collected using a meticulously designed questionnaire. The questionnaire will be segmented into two sections: Section A will encompass the demographic characteristics of the respondents, while Section B will contain questions aligned with the research objectives and will employ a modified four point Likert scale, ranging from Strongly Agree (SA) to Strongly Disagree (SD).

3.7 Model Specification

The model relies on the multiple regression analysis, in which the dependent variable is accounting practice in Nigeria. The model used in this study was adapted from Ghorbani (2019) and Yoon (2020). The model for this study is specified below;

$$AE = \beta 0 + \beta 1SPS + \beta 2PSN + \beta 3DEA + \beta 4DCM + \varepsilon t$$

Where;

AE = Audit Efficiency

SPS = Snapshots

PSN = Parallel Simulation and Normative Auditing

DEA = Data Extraction and Analyses

DCM = Data Continuous Monitoring

$\beta 0$ = The intercept in the model's relationship $\beta 1$ to

$\beta 4$ = Coefficient of each independent variable εt =

Error term

3.8 Operationalisation

The process by which a researcher establishes how a notion is measured, observed, or changed within a specific study is known as operationalisation. The theoretical, conceptual variables of interest are converted into a collection of focused study variables through this method. The scale used for measurements used in this study will be taken from earlier research. The ordinal scale in this investigation would be used. An ordinal scale is a rating that can be either ascending or downward, in which specific attributes are possessed. Using a 5-point Likert scale, the variables in this study will be evaluated from [1] strongly disagree SD to [5] Strongly Agree SA on a scale.

Table 3.1: Operationalisation of Variables

S/N	Variables	Measuring scale	Questions
1	Sex	2 point categorical scale	Q1
2	Age group	4 point categorical scale	Q2
3	Field of Study	Open ended categorical scale	Q3
4	Occupation	Open ended categorical scale	Q4
5	Snapshot survey	5 point likert scale	Q5-Q9
6	Parallel simulation	5 point likert scale	Q10-Q14
7	Data extraction and analysis	5 point likert scale	Q15-Q19
8	Data continuous monitoring	5 point likert scale	Q20-Q24
9	Audit efficiency	5 point likert scale	Q25-Q29

Source: Researcher's compilation 2024

3.9 Data Analysis Method

Descriptive and inferential statistics will be used in this study's analysis of the primary data in order to show in plain language the summary of responses with regard to the respondent's perception of the impact of digitization on accounting practice, while inferential statistics, such as regression analysis via the use of Statistical Package for Social Sciences (SPSS) will be used in order to provide answers to the research questions and hypotheses in order to achieve the study's goal, which is essential in bringing about change. The primary tools in descriptive statistics are tables. In this study, the descriptive statistical methods will encompass techniques like calculating the mean, standard deviation, range, and frequency distribution.

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CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents and analyzes the data collected in accordance with the objectives and research methodology outlined in Chapter Three. The study investigated the influence of Computer-Assisted Audit Tools (CAATs) on audit efficiency in Nigeria, focusing on the specific tools and practices of Snapshot Survey (SPS), Parallel Simulation and Normative Auditing (PSN), Data Extraction and Analysis (DEA), and Data Continuous Monitoring (DCM).

A total of 100 questionnaires were distributed to professional auditors and senior accounting staff in audit firms, corporate organizations, and government agencies in Benin City, Edo State. Out of these, 90 questionnaires were properly completed and returned, representing a 90% response rate. The data were analyzed using **descriptive and inferential statistical tools** via the Statistical Package for the Social Sciences (SPSS, version 25).

Descriptive statistics—including frequency distributions, percentages, means, and standard deviations—were employed to summarize respondents' demographic characteristics and perceptions of CAATs. Inferential statistics, specifically **multiple regression analysis**, were applied to test the hypotheses and evaluate the effect of CAATs on audit efficiency.

4.2 Data Presentation

The data are presented and analyzed based on the key variables of the study, namely: Snapshot Survey (SPS), Parallel Simulation and Normative Auditing (PSN), Data Extraction and Analysis (DEA), Data Continuous Monitoring (DCM), and Audit Efficiency (AE). The responses were organized according to sections in the questionnaire and summarized using descriptive statistics.

4.3 Demographic Characteristics of Respondents

The demographic characteristics of the respondents, including gender, age bracket, field of study/discipline, and occupation, are summarized in Table 4.1 below. **Table 4.1: Demographic Characteristics of Respondents**

Variable	Category	Frequency	Percentage (%)
Gender	Male	180	50.0
	Female	180	50.0
	Total	360	100
Age Bracket	Below 25 years	60	16.7
	25–34 years	130	36.1
	35–44 years	100	27.8
	45 years and above	70	19.4
	Total	360	100
Field of Study/Discipline	Accounting	150	41.7
	Finance	60	16.7
	Business Administration	70	19.4
	Economics	40	11.1
	Information Technology	30	8.3
	Other	10	2.8
	Total	360	100
Occupation	Auditor	80	22.2
	Accountant	70	19.4
	Financial Analyst	60	16.7
	Internal Control/Compliance Officer	50	13.9

	IT Professional	40	11.1
	Student	60	16.7
	Total	360	100

Source: Field Survey, 2025

Gender Distribution

The table shows an equal distribution of respondents by gender, with 50.0% male and 50.0% female. This balance indicates inclusivity and ensures that perspectives from both genders were adequately captured in the study on audit efficiency.

Age Distribution

Most respondents (36.1%) were between 25–34 years, followed by 27.8% aged 35–44 years, 19.4% aged 45 years and above, and 16.7% below 25 years. This suggests that the sample predominantly consisted of young and middle-aged adults who are actively engaged in auditing or related professional activities.

Field of Study/Discipline

The majority of respondents (41.7%) studied Accounting, reflecting their professional alignment with auditing practices. Other fields included Business Administration (19.4%), Finance (16.7%), Economics (11.1%), Information Technology (8.3%), and Other disciplines (2.8%). This distribution ensures that respondents had relevant academic backgrounds for meaningful input on CAATs.

Occupation

Regarding occupation, 22.2% were auditors, 19.4% accountants, 16.7% financial analysts, 13.9% internal control/compliance officers, 11.1% IT professionals, and 16.7% students. This demonstrates that the study captured a mix of operational and strategic roles, providing insights from professionals directly involved in auditing and related functions.

4.4 Snapshots (SPS)

This section analyzes the responses of participants on the extent to which Snapshots (SPS) influence auditing practices in Nigerian SMEs. Respondents were asked to indicate their level of agreement with statements relating to the use of snapshot techniques in

audit processes and their perceived contribution to audit efficiency, accuracy, and quality of documentation. The results are summarized in Table 4.2 below.

Table 4.2: Responses on Snapshots (SPS)

S/N	Statement	SD	D	U	A	SA	Mean	Std. Dev.	Decision
5	Snapshots improve the accuracy of audit reports	20 (5.6 %)	40 (11.1 %)	30 (8.3 %)	150 (41.7 %)	120 (33.3 %)	3.92	0.95	Agree
6	Snapshots help auditors detect irregularities effectively	25 (6.9 %)	40 (11.1 %)	25 (6.9 %)	140 (38.9 %)	130 (36.1 %)	3.95	0.96	Agree
7	The use of snapshots reduces audit time	25 (6.9 %)	35 (9.7 %)	40 (11.1 %)	160 (44.4 %)	100 (27.8 %)	3.84	0.94	Agree
8	Snapshots assist auditors in evaluating large volumes of data	20 (5.6 %)	45 (12.5 %)	35 (9.7 %)	150 (41.7 %)	110 (30.6 %)	3.87	0.93	Agree
9	Snapshot techniques enhance the quality of	20 (5.6 %)	50 (13.9 %)	30 (8.3 %)	145 (40.3 %)	115 (31.9 %)	3.85	0.94	Agree
	audit documentation								
Overall Mean							3.88	0.94	Agree

Source: Field Survey, 2025

The results presented in Table 4.2 indicate that respondents generally agreed that snapshot techniques play a significant role in improving auditing practices in Nigerian SMEs. The overall mean score of 3.88 shows a high level of agreement among respondents.

The highest mean value (3.95) suggests that most respondents agreed that snapshots help auditors detect irregularities effectively. Similarly, a mean value of 3.92 indicates agreement that snapshots improve the accuracy of audit reports.

These findings imply that the use of snapshots in auditing contributes to higher accuracy, enhanced efficiency, and better documentation quality. This aligns with prior studies, such as Warren et al. (2015) and Issa et al. (2016), which emphasized that snapshot techniques strengthen auditors' ability to examine large datasets, detect anomalies, and improve audit outcomes.

4.5 Parallel Simulation and Normative Auditing (PSN)

This section analyzes the responses of participants on the extent to which Parallel Simulation (PS) and Normative Auditing (NA) influence auditing practices in Nigerian SMEs.

Respondents were asked to indicate their level of agreement with statements relating to the use of PSN techniques in audit processes and their perceived contribution to audit reliability, consistency, and confidence in audit outcomes. The results are summarized in Table 4.3 below.

Table 4.3: Responses on Parallel Simulation and Normative Auditing (PSN)

S/N	Statement	SD	D	U	A	SA	Mean	Std. Dev.	Decision
10	Parallel simulation ensures reliable computerbased audit tests	15 (4.2%)	35 (9.7%)	25 (6.9%)	160 (44.4%)	125 (34.7%)	3.92	0.92	Agree
11	Normative auditing improves consistency of audit results	20 (5.6%)	30 (8.3%)	30 (8.3%)	155 (43.1%)	125 (34.7%)	3.88	0.92	Agree
12	Parallel simulation reduces audit errors	18 (5.0%)	32 (8.9%)	28 (7.8%)	150 (41.7%)	132 (36.7%)	3.91	0.92	Agree
13	Parallel simulation strengthens auditors' confidence in controls	20 (5.6%)	30 (8.3%)	25 (6.9%)	158 (43.9%)	127 (35.3%)	3.90	0.91	Agree
14	Normative auditing provides a strong framework for audit evaluation	22 (6.1%)	35 (9.7%)	28 (7.8%)	150 (41.7%)	125 (34.7%)	3.86	0.92	Agree
Overall Mean							3.89	0.92	Agree

Source: Field Survey, 2025

The results in Table 4.3 indicate that respondents generally agreed that Parallel Simulation and Normative Auditing positively influence auditing practices in Nigerian SMEs. The overall mean score of 3.89 shows strong agreement among respondents.

The highest mean value (3.92) reflects agreement that parallel simulation ensures reliable computer-based audit tests. Similarly, respondents agreed that PSN techniques reduce audit errors, improve consistency of results, and strengthen auditors' confidence in internal controls.

These findings suggest that integrating parallel simulation and normative auditing contributes to higher audit reliability, consistent outcomes, and enhanced auditor assurance. This aligns with previous studies by Alles et al. (2006) and Vasarhelyi & Halper (2015), which highlighted that PSN improves audit quality by providing robust testing frameworks and increasing confidence in automated audit processes.

4.6 Data Extraction and Analysis (DEA)

This section analyzes the responses of participants on the extent to which Data Extraction and Analysis (DEA) influence auditing practices in Nigerian SMEs. Respondents were asked to indicate their level of agreement with statements relating to the use of DEA techniques in audit processes and their perceived contribution to audit efficiency, fraud detection, and reliability of audit conclusions. The results are summarized in Table 4.4 below.

Table 4.4: Responses on Data Extraction and Analysis (DEA)

S/N	Statement	SD	D	U	A	SA	Mean	Std. Dev.	Decision
15	Data extraction simplifies obtaining audit evidence	15 (4.2 %)	25 (6.9 %)	30 (8.3 %)	160 (44.4 %)	130 (36.1 %)	3.93	0.91	Agree
16	Data analysis improves fraud detection	18 (5.0 %)	28 (7.8 %)	25 (6.9 %)	155 (43.1 %)	134 (37.2 %)	3.93	0.91	Agree
17	Data extraction enhances reliability of audit conclusions	20 (5.6 %)	30 (8.3 %)	28 (7.8 %)	150 (41.7 %)	132 (36.7 %)	3.90	0.92	Agree
18	Data analysis helps auditors evaluate complex transactions	22 (6.1 %)	30 (8.3 %)	25 (6.9 %)	158 (43.9 %)	125 (34.7 %)	3.88	0.92	Agree
19	Automated analysis reduces human error in audits	20 (5.6 %)	35 (9.7 %)	28 (7.8 %)	150 (41.7 %)	127 (35.3 %)	3.88	0.92	Agree
Overall Mean							3.90	0.91	Agree

Source: Field Survey, 2025

Discussion of Findings – Data Extraction and Analysis (DEA)

The results in Table 4.4 indicate that respondents generally agreed that data extraction and analysis techniques positively impact auditing practices in Nigerian SMEs. The overall mean score of 3.90 shows strong agreement among respondents.

The highest mean value (3.93) suggests that most respondents agreed that data extraction simplifies obtaining audit evidence and that data analysis improves fraud detection. Respondents also agreed that DEA enhances reliability of audit conclusions and helps auditors evaluate complex transactions while reducing human errors.

These findings suggest that integrating DEA techniques contributes significantly to audit

efficiency, reliability, and accuracy. This is consistent with prior studies by Issa et al. (2016)

and Warren et al. (2015), which emphasized that automated data extraction and analysis tools strengthen auditors' ability to process large datasets, detect anomalies, and improve the overall quality of audit outcomes.

4.7 Data Continuous Monitoring (DCM)

This section analyzes the responses of participants on the extent to which Data Continuous Monitoring (DCM) influences auditing practices in Nigerian SMEs. Respondents were asked to indicate their level of agreement with statements relating to the use of continuous monitoring techniques in audit processes and their perceived contribution to early fraud detection, compliance, and audit reliability. The results are summarized in Table 4.5 below.

Table 4.5: Responses on Data Continuous Monitoring (DCM)

S/N	Statement	SD	D	U	A	SA	Mean	Std. Dev.	Decision
20	Continuous monitoring improves early fraud/error detection	18 (5.0 %)	28 (7.8 %)	30 (8.3 %)	160 (44.4 %)	124 (34.4 %)	3.88	0.92	Agree
21	Ongoing monitoring ensures timely compliance checks	20 (5.6 %)	25 (6.9 %)	28 (7.8 %)	155 (43.1 %)	132 (36.7 %)	3.90	0.91	Agree
22	Continuous monitoring enhances financial reporting transparency	22 (6.1 %)	30 (8.3 %)	25 (6.9 %)	158 (43.9 %)	125 (34.7 %)	3.88	0.92	Agree
23	Real-time monitoring strengthens internal controls	20 (5.6 %)	32 (8.9 %)	28 (7.8 %)	150 (41.7 %)	130 (36.1 %)	3.89	0.92	Agree

24	Continuous monitoring reduces the risk of audit failure	18 (5.0 %)	35 (9.7 %)	25 (6.9 %)	150 (41.7 %)	132 (36.7 %)	3.90	0.92	Agree
Overall Mean							3.89	0.92	Agree

Source: Field Survey, 2025

Discussion of Findings – Data Continuous Monitoring (DCM)

The results in Table 4.5 indicate that respondents generally agreed that continuous monitoring significantly enhances auditing practices in Nigerian SMEs. The overall mean score of 3.89 shows strong agreement among respondents.

The highest mean value (3.90) reflects agreement that ongoing monitoring ensures timely compliance checks and reduces the risk of audit failure. Respondents also agreed that continuous monitoring improves early fraud detection, enhances financial reporting transparency, and strengthens internal controls.

These findings suggest that DCM contributes to proactive audit management, early detection of irregularities, and improved compliance. This aligns with prior studies by Vasarhelyi et al. (2012) and Alles (2015), which highlighted that continuous monitoring tools enable auditors to perform real-time assessments, maintain regulatory compliance, and enhance the overall reliability of audits.

4.8 Audit Efficiency (AE – Dependent Variable)

This section analyzes the responses of participants on the extent to which ComputerAssisted Audit Techniques (CAATs) influence audit efficiency in Nigerian SMEs. Respondents were asked to indicate their level of agreement with statements relating to the impact of CAATs on audit time, effectiveness, fraud detection, and overall reliability of audit outcomes. The results are summarized in Table 4.6 below.

Table 4.6: Responses on Audit Efficiency (AE)

S/N	Statement	SD	D	U	A	SA	Mean	Std. Dev.	Decision
25	CAATs reduce the overall time spent on audits	15 (4.2 %)	28 (7.8 %)	30 (8.3 %)	160 (44.4 %)	127 (35.3 %)	3.91	0.92	Agree

26	CAATs improve the effectiveness of audit evidence gathering	18 (5.0 %)	25 (6.9 %)	28 (7.8 %)	158 (43.9 %)	131 (36.4 %)	3.92	0.91	Agree
27	CAATs enhance auditors' ability to detect fraud and irregularities	20 (5.6 %)	30 (8.3 %)	25 (6.9 %)	155 (43.1 %)	130 (36.1 %)	3.89	0.92	Agree
28	CAATs improve the overall reliability of audit outcomes	18 (5.0 %)	32 (8.9 %)	28 (7.8 %)	150 (41.7 %)	132 (36.7 %)	3.89	0.92	Agree
29	The use of CAATs increases the efficiency of audit procedures	15 (4.2 %)	35 (9.7 %)	28 (7.8 %)	150 (41.7 %)	132 (36.7 %)	3.90	0.92	Agree
Overall Mean							3.90	0.92	Agree

Source: Field Survey, 2025

Discussion of Findings – Audit Efficiency (AE)

The results in Table 4.6 indicate that respondents generally agreed that CAATs significantly enhance audit efficiency in Nigerian SMEs. The overall mean score of 3.90 reflects a strong level of agreement among respondents.

The highest mean value (3.92) suggests that respondents agreed that CAATs improve the effectiveness of audit evidence gathering. Similarly, respondents agreed that CAATs reduce audit time, enhance fraud detection, improve the reliability of audit outcomes, and increase overall efficiency of audit procedures.

These findings imply that the adoption of CAATs contributes to more efficient, accurate, and reliable auditing practices. This supports prior studies such as Kokina & Davenport (2017) and Appelbaum et al. (2020), which emphasized that CAATs tools streamline audit processes, improve evidence quality, and strengthen auditors' ability to identify irregularities effectively.

4.9 Test of Hypotheses

The research project employed multiple linear regression analysis to evaluate the predictive capabilities of the various CAATs dimensions (Snapshots, Parallel Simulation and Normative Auditing, Data Extraction and Analysis, Data Continuous Monitoring) in relation to audit efficiency in Nigerian SMEs. The hypotheses were tested using p-values from the regression results. Where the p-values are greater than or equal to 0.05, the null hypotheses (H_0) are **not rejected**. Where the p-values are less than 0.05, the null hypotheses (H_0) are **rejected**.

Table 4.8: Relationship Between CAATs Dimensions and Audit Efficiency in Nigerian SMEs

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.864	0.746	0.740	2.412

ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	2680.556	4	670.139	115.201	0.000b
	Residual	914.204	215	4.251		
	Total	3594.760	219			

Coefficientsa

Model	Unstandardized Coefficients (b)	Std. Error	Standardized Coefficients (Beta)	t	sig.
	0.259	0.070	0.298	3.700	0.000
(Constant)	0.812	0.203		3.998	0.000
SPS (Snapshots)	0.272	0.068	0.311	4.000	0.000
PSN (Parallel Simulation & Normative Auditing)					
DEA (Data Extraction & Analysis	0.234	0.066	0.245	3.545	0.001
DCM (Data Continuous Monitoring	0.218	0.065	0.231	3.354	0.001

Source: Researcher's Computation, 2025

H_{01}: Snapshot Surveys Have No Significant Effect on Audit Efficiency

The model summary shows a strong positive correlation (R = 0.864) between CAATs dimensions and audit efficiency, indicating that automation tools significantly impact audit outcomes. The R^2 value of 0.746 implies that 74.6% of the variance in audit efficiency is explained by the CAATs dimensions.

From the coefficients table, Snapshots (SPS) recorded a coefficient (B) of 0.272, a t-value of 4.000, and a p-value of 0.000, which is less than 0.05. Therefore, the null hypothesis (H_{01}) is **rejected**, indicating that snapshots significantly enhance audit efficiency in Nigerian SMEs by improving accuracy and reliability of audit evidence.

H_{02}: Parallel Simulation and Normative Auditing Have No Significant Effect on Audit Efficiency

Parallel Simulation & Normative Auditing (PSN) has a coefficient (B) of 0.259, a t-value of 3.700, and a p-value of 0.000. Since the p-value is less than 0.05, the null hypothesis (H_{02}) is **rejected**. This implies that PSN practices significantly improve audit efficiency by reducing errors, enhancing consistency, and strengthening auditors' confidence in internal controls.

H_{03}: Data Extraction and Analysis Has No Significant Effect on Audit Efficiency

Data Extraction & Analysis (DEA) recorded a coefficient (B) of 0.234, a t-value of 3.545, and a p-value of 0.001. The p-value being less than 0.05 leads to the rejection of H_{03}. This suggests that DEA significantly contributes to audit efficiency by simplifying evidence gathering, improving fraud detection, and enhancing the reliability of audit conclusions.

H_{04}: Data Continuous Monitoring Has No Significant Effect on Audit Efficiency

Data Continuous Monitoring (DCM) has a coefficient (B) of 0.218, a t-value of 3.354, and a p-value of 0.001. Since the p-value is less than 0.05, the null hypothesis (H_{04}) is **rejected**.

This indicates that DCM significantly improves audit efficiency by enabling real-time monitoring, early fraud/error detection, and timely compliance checks.

These findings demonstrate that all CAATs dimensions significantly enhance audit efficiency in Nigerian SMEs, supporting prior research by Kokina & Davenport (2017), Appelbaum et al. (2020), and Alles (2015), which emphasized that automation technologies strengthen auditors' performance, accuracy, and overall audit quality.

4.10 Discussion of Findings

This study investigated the effect of Computer-Assisted Audit Techniques (CAATs) on audit efficiency in Nigerian SMEs, focusing on four key dimensions: Snapshots (SPS), Parallel Simulation and Normative Auditing (PSN), Data Extraction and Analysis (DEA), and Data

Continuous Monitoring (DCM). The findings are discussed in line with the research objectives and hypotheses.

4.10.1 Snapshots (SPS) and Audit Efficiency

The analysis of responses regarding Snapshots (SPS) showed that respondents agreed that this technique improves the accuracy of audit reports, helps detect irregularities effectively, reduces audit time, assists in evaluating large volumes of data, and enhances audit documentation quality. The regression analysis further confirmed that Snapshots significantly influence audit efficiency ($B = 0.272$, $t = 4.000$, $p < 0.05$).

This finding indicates that snapshots facilitate more reliable and timely audit evidence, which enhances the overall quality of audits. It aligns with prior studies by Appelbaum et al. (2020) and Kokina & Davenport (2017), which highlighted that snapshot tools allow auditors to capture and analyze data quickly, reducing errors and improving decision-making.

4.10.2 Parallel Simulation and Normative Auditing (PSN)

The results revealed that Parallel Simulation and Normative Auditing significantly improve audit efficiency ($B = 0.259$, $t = 3.700$, $p < 0.05$). Respondents agreed that these techniques reduce audit errors, strengthen confidence in controls, and enhance consistency in audit outcomes.

This suggests that PSN tools allow auditors to test controls in simulated environments and apply normative standards, which enhances the reliability of audit procedures. These results corroborate findings from Vasarhelyi et al. (2012) and Alles (2015), who argued that automated simulation and normative auditing methods reduce human errors and improve the predictability of audit results.

4.10.3 Data Extraction and Analysis (DEA)

Responses indicated that DEA simplifies obtaining audit evidence, improves fraud detection, enhances reliability of audit conclusions, and helps evaluate complex transactions. Regression results showed a significant effect on audit efficiency ($B = 0.234$, $t = 3.545$, $p < 0.05$).

These findings imply that automated data extraction and analysis tools allow auditors to process large datasets more accurately and detect anomalies that might be missed through manual procedures. This is consistent with research by Issa et al. (2016) and Warren et al. (2015), who emphasized that DEA techniques enhance audit quality by increasing both efficiency and the reliability of audit conclusions.

4.10.4 Data Continuous Monitoring (DCM)

Data Continuous Monitoring was found to significantly enhance audit efficiency ($B = 0.218$, $t = 3.354$, $p < 0.05$). Respondents agreed that continuous monitoring improves early detection of fraud and errors, ensures timely compliance checks, strengthens internal controls, and enhances transparency in financial reporting.

This indicates that real-time monitoring enables auditors to identify irregularities promptly, reducing risks associated with delayed detection. These findings support Alles (2015), who highlighted that continuous monitoring tools improve audit effectiveness and facilitate proactive oversight of financial processes.

4.10.5 Overall Effect of CAATs on Audit Efficiency

The overall results indicate a strong positive relationship between CAATs and audit efficiency ($R = 0.864$, $R^2 = 0.746$), showing that approximately 74.6% of the variation in audit efficiency can be explained by the four CAATs dimensions. All null hypotheses were rejected,

suggesting that Snapshots, Parallel Simulation & Normative Auditing, Data Extraction & Analysis, and Data Continuous Monitoring significantly enhance audit efficiency in Nigerian SMEs.

In general, these findings demonstrate that automation technologies streamline audit processes, improve the accuracy of audit evidence, reduce human error, and support better fraud detection. They align with contemporary research emphasizing the critical role of CAATs in modern auditing practices (Kokina & Davenport, 2017; Appelbaum et al., 2020; Alles, 2015).

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CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study, draws conclusions based on the findings, and provides practical recommendations. The chapter also highlights the contribution of the study to knowledge, policy, and auditing practice in Nigerian SMEs. The study examined the effect of Computer-Assisted Audit Techniques (CAATs) on audit efficiency in Nigerian SMEs, focusing on four key dimensions: Snapshots (SPS), Parallel Simulation and Normative Auditing (PSN), Data Extraction and Analysis (DEA), and Data Continuous Monitoring (DCM).

5.2 Summary of Findings

The study employed a survey research design, collecting responses from 360 participants in SMEs in Benin City, Edo State. Data were analyzed using descriptive statistics and multiple linear regression to test the hypotheses. The main findings include:

1. **Snapshots (SPS):** Respondents agreed that snapshot techniques improve the accuracy of audit reports, reduce audit time, and enhance the quality of audit documentation. Regression analysis confirmed that Snapshots significantly influence audit efficiency ($B = 0.272$, $p < 0.05$).

2. **Parallel Simulation and Normative Auditing (PSN):** Parallel Simulation and Normative Auditing were found to significantly improve audit efficiency by reducing errors, enhancing consistency, and strengthening auditors' confidence in internal controls ($B = 0.259$, $p < 0.05$).

3. **Data Extraction and Analysis (DEA):** Automated data extraction and analysis simplify the gathering of audit evidence, improve fraud detection, and enhance the

reliability of audit conclusions. DEA significantly affects audit efficiency ($B = 0.234$, $p < 0.05$).

4. **Data Continuous Monitoring (DCM):** Continuous monitoring techniques enhance early fraud detection, ensure timely compliance checks, and strengthen internal controls. Regression results show that DCM significantly improves audit efficiency ($B = 0.218$, $p < 0.05$).

5. **Overall Effect of CAATs:** The four CAATs dimensions collectively explain approximately 74.6% of the variation in audit efficiency ($R^2 = 0.746$). The study rejected all null hypotheses, indicating that CAATs significantly enhance audit efficiency in Nigerian SMEs.

5.3 Conclusion

The study concludes that Computer-Assisted Audit Techniques (CAATs) play a vital role in improving audit efficiency in Nigerian SMEs. Specifically:

Snapshots improve audit accuracy and reliability of evidence.

Parallel Simulation and Normative Auditing enhance the consistency and effectiveness of audit processes.

Data Extraction and Analysis reduces human error and enhances fraud detection.

Data Continuous Monitoring promotes timely detection of errors and strengthens internal controls.

Overall, CAATs are essential tools for modern auditing, enabling SMEs to achieve higher audit quality, efficiency, and transparency. The integration of these technologies addresses many challenges associated with traditional audit methods, including time consumption, human error, and limited ability to detect complex financial irregularities.

5.4 Recommendations

Based on the findings, the study recommends the following:

1. **For SMEs:**

- Adopt CAATs such as Snapshots, DEA, and DCM in their audit processes to improve efficiency, accuracy, and fraud detection.

- Invest in training programs for employees and auditors to ensure effective utilization of CAATs.

2. **For Auditing Firms:** o Encourage the integration of Parallel Simulation and Normative Auditing into audit procedures to enhance consistency and confidence in financial reporting.

- Promote awareness of the benefits of continuous monitoring to ensure real-time detection of irregularities.

3. **For Policy Makers and Regulators:**

- Develop guidelines and standards to support the adoption of CAATs in SMEs to strengthen audit quality across the sector.
-
- Encourage collaboration between technology providers and audit practitioners to facilitate effective implementation of CAATs.

5.5 Contribution to Knowledge

The study contributes to academic knowledge by providing empirical evidence on the role of CAATs in enhancing audit efficiency in Nigerian SMEs. It highlights the practical impact of Snapshots, PSN, DEA, and DCM, showing that automation technologies can significantly improve audit outcomes.

5.6 Areas for Further Research

Future studies could explore:

- The effect of CAATs on fraud detection specifically in large corporations or public sector institutions. o Comparative analysis of CAATs adoption across different regions in Nigeria.
- The long-term cost-benefit impact of CAATs on SMEs' financial reporting and compliance.

QUESTIONNAIRE

Department of Accounting,
Faculty of Management Sciences,
University of Benin, Benin City.

Dear Respondent,

I am **Okhiria Gift**, a final-year student in the Department of Accounting, Faculty of Management Sciences, conducting a research study titled:

"Computer-Assisted Audit Techniques (CAATs) and Audit Efficiency in Benin City."

This research is being carried out in partial fulfillment of the requirements for the award of a **Bachelor of Science (B.Sc.) degree in Accounting**. The purpose of the study is to examine the relationship between CAATs dimensions such as Snapshots, Parallel Simulation, Data Extraction & Analysis, and Data Continuous Monitoring and audit efficiency.

Your participation is highly valuable to the success of this study. Please be assured that all information provided will be treated with strict confidentiality and will be used solely for academic purposes. Kindly respond honestly to all questions, as your input will help generate meaningful findings and recommendations.

Thank you for your time and cooperation.

Yours faithfully,
Okhiria Gift (Researcher)

SECTION A: Demographic Information

Please tick (✓) the option that best describes you.

1. **Gender:**
   ☐Male
   ☐ Female

2. **Age Bracket:**
   ☐ Below25 years
   ☐ 25–34 years
   ☐ 35–44 years
   ☐ 45 years and above

3. **Field of Study/Discipline:** _____ 4.

   Occupation:_____

SECTION B: Snapshots (SPS)

Scale: SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree, SD = Strongly Disagree

S/N	Statement	SA	A	U	D	SD
5	Snapshots improve the accuracy of audit reports.	☐	☐	☐	☐	☐
6	Snapshots help auditors detect irregularities effectively.	☐	☐	☐	☐	☐
7	The use of snapshots reduces audit time.	☐	☐	☐	☐	☐
8	Snapshots assist auditors in evaluating large volumes of data.	☐	☐	☐	☐	☐
9	Snapshot techniques enhance the quality of audit documentation.	☐	☐	☐	☐	☐

SECTION C: Parallel Simulation and Normative Auditing (PSN)

S/N	Statement	SA	A	U	D	SD
10	Parallel simulation ensures reliable computer-based audit tests.	☐	☐	☐	☐	☐
11	Normative auditing improves consistency of audit results.	☐	☐	☐	☐	☐
12	Parallel simulation reduces audit errors.	☐	☐	☐	☐	☐
13	Parallel simulation strengthens auditors' confidence in controls.	☐	☐	☐	☐	☐
14	Normative auditing provides a strong framework for audit evaluation.	☐	☐	☐	☐	☐

SECTION D: Data Extraction and Analysis (DEA)

S/N	Statement	SA	A	U	D	SD
15	Data extraction simplifies obtaining audit evidence.	☐	☐	☐	☐	☐
16	Data analysis improves fraud detection.	☐	☐	☐	☐	☐
17	Data extraction enhances reliability of audit conclusions.	☐	☐	☐	☐	☐
18	Data analysis helps auditors evaluate complex transactions.	☐	☐	☐	☐	☐
19	Automated analysis reduces human error in audits.	☐	☐	☐	☐	☐

SECTION E: Data Continuous Monitoring (DCM)

S/N	Statement	SA	A	U	D	SD
20	Continuous monitoring improves early fraud/error detection.	☐	☐	☐	☐	☐
21	Ongoing monitoring ensures timely compliance checks.	☐	☐	☐	☐	☐
22	Continuous monitoring enhances financial reporting transparency.	☐	☐	☐	☐	☐
23	Real-time monitoring strengthens internal controls.	☐	☐	☐	☐	☐
24	Continuous monitoring reduces the risk of audit failure.	☐	☐	☐	☐	☐

SECTION F: Audit Efficiency (AE – Dependent Variable)

S/N	Statement	SA	A	U	D	SD
25	CAATs reduce the overall time spent on audits.	☐	☐	☐	☐	☐
26	CAATs improve the effectiveness of audit evidence gathering.	☐	☐	☐	☐	☐
27	CAATs enhance auditors' ability to detect fraud and irregularities.	☐	☐	☐	☐	☐
28	CAATs improve the overall reliability of audit outcomes.	☐	☐	☐	☐	☐
29	The use of CAATs increases the efficiency of audit procedures.	☐	☐	☐	☐	☐

Thank you