The effects of mobile audit tools on internal audit practices: Reflections from selected private companies in Tanzania

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ABSTRACT

This study assessed the effectiveness of mobile audit tools on internal audit practices at private companies in Tanzania. It adopted the Diffusion of Innovation theory. The study also used an explanatory research design and a quantitative approach. Data were collected from a sample of 73 internal auditors at Assad Associates and Adolph Associates using structured questionnaires with a 5-point Likert scale. A purposive sampling technique was used to select participants with direct experience in auditing technologies. The collected data were processed and analysed using descriptive statistics and Structural Equation Modelling (SEM) in SPSS v26 and Smart PLS 4, enabling the study to examine both basic trends and complex relationships between mobile auditing tools and internal audit effectiveness. The study's findings indicate that mobile auditing tools significantly enhance audit effectiveness by improving clarity, timeliness, accuracy, flexibility, and overall efficiency. The study concludes that integrating mobile technologies is essential for modernizing internal audit functions. Thus, the study recommends that private companies prioritize the adoption and use of mobile auditing tools and provide targeted training for auditors to strengthen audit reliability, transparency, and overall organizational accountability.

Keywords: Audit Effectiveness, Digitalization, Mobile Audit Tools, Private Companies, SEM

I. INTRODUCTION

The growing complexity of business operations and the rapid pace of technological advancements have necessitated significant changes in internal audit practices. Traditional auditing methods, which rely heavily on manual processes, are increasingly being replaced by technology-driven tools such as mobile auditing systems, distributed ledger, and automated reporting tools (Rozario & Vasarhelyi, 2018). These technological innovations promise greater efficiency, accuracy, and timeliness in audits. However, despite the potential benefits, many organizations face challenges in integrating these technologies due to issues like high implementation costs, lack of technical expertise, and resistance to change (Betti et al., 2021).

Globally, internal audit (IA) practices have become increasingly critical in ensuring transparency, accountability, and compliance within organizations. The demand for improved corporate governance has led to IA being recognized as a cornerstone in mitigating financial risks and improving operational efficiency (Christ et al., 2021). According to the Global Internal Audit Common Body of Knowledge (CBOK) study, 81% of internal auditors worldwide believe their roles have expanded significantly beyond financial controls to include governance, risk management, and performance improvement across industries. In fact, the Institute of Internal Auditors (IIA) indicates that over 50% of IA functions now include advisory roles in addition to traditional assurance services. However, despite these advancements, challenges such as insufficient resources, lack of technological integration, and skills gaps remain common in many organizations, impacting IA effectiveness (IIA, 2020).

Internal audit practices in Sub-Saharan Africa (SSA) face additional obstacles, including resource constraints, limited professional capacity, and insufficient independence of IA departments. The IIA's 2021 African Pulse of Internal Audit Report highlighted that 68% of internal audit teams in SSA report to management, rather than directly to the board, undermining their independence and effectiveness. Furthermore, the level of adoption of technology in internal audits remains relatively low, with only 32% of internal audit teams in SSA leveraging data analytics and other advanced audit tools. Furthermore, SSA faces a significant shortage of certified internal auditors, with only 20% of auditors in the region holding professional qualifications such as the Certified Internal Auditor (CIA) designation (IIA, 2021).

In Tanzania, the internal audit profession has gained recognition but continues to face challenges, particularly in public institutions. A study by Shishiwa and Said (2020) indicated that only 45% of Tanzanian public organizations have well-functioning internal audit departments. Among local government authorities (LGAs), internal audit functions are often underfunded, with limited professional development opportunities for auditors. This results in inadequate risk assessments and insufficient coverage of key audit areas. Furthermore, independence remains a critical issue, with most

internal auditors reporting directly to management, rather than the audit committee; this does weaken their ability to perform unbiased assessments (Njeza et al., 2024). The Controller and Auditor General (CAG) of Tanzania also reported persistent weaknesses in internal controls within government institutions, highlighting the need for stronger internal audit frameworks.

In private companies, particularly in Tanzania, internal audit practices are somewhat more developed, but still face significant limitations. While large multinational firms operating in the country often have advanced internal audit systems, local private companies lag. According to a report by PricewaterhouseCoopers [PwC] in 2021, only 30% of Tanzanian private companies have fully automated internal audit systems. The reliance on manual processes and the lack of integration with financial systems limit the ability of internal audit teams to identify risks in real time. Furthermore, a shortage of current technical skills among internal auditors remains one of the key barrier to improving the effectiveness of internal audits within the private sector. This lack of expertise, combined with the rapid expansion of businesses, places additional strain on internal audit functions, limiting their capacity to support decision-making and governance structures effectively (Njeza et al., 2024).

1.1 Statement of the Problem

While global literature highlights a clear shift from manual to digital internal audit practices (Rozario & Vasarhelyi, 2018), little is known regarding the specific effects associated with adopting mobile auditing tools within the Tanzanian private sector. Studies by Betti et al. (2021) explore barriers to audit technology adoption across Africa, but they do not delve into the effects of use, specifically in the context of Tanzanian enterprises. Likewise, Njeza et al. (2024) and Shishiwa and Said (2020) investigated technological impacts on auditing in public institutions, leaving the private sector under-examined. Even Price Waterhouse Coopers report of 2021, which quantifies the level of technology adoption among Tanzanian private companies, stops short of analysing how mobile auditing affects the effectiveness of internal audit practices, hence the need for this study.

1.2 Research Objective

The study objective was to assess the effect of mobile auditing tools on the effectiveness of internal audit practices in selected Tanzanian private companies.

II. LITERATURE REVIEW

2.1 Theoretical Review

The study adopted the Diffusion of Innovation theory developed by Everett Rogers in 1962. The theory identified five key attributes that influence adoption, which are relative advantage, compatibility, complexity, trialability, and observability, and distinguished adopter categories (innovators, early adopters, early majority, late majority, and laggards) based on the time taken to embrace an innovation (Rogers, 2003). The theory assumes that individuals make rational decisions about whether to adopt, that social networks and opinion leaders play important roles in disseminating information, and that innovations diffuse unevenly through heterogeneous groups, thus generating S-shaped adoption curves over time (Kaminski, 2011).

The Diffusion of Innovations (DOI) Theory is highly relevant to this study because it explains how new mobile auditing tools spread through organisations. By focusing on factors like relative advantage, compatibility with existing practices, and ease of trialability, DOI helps to identify why some private companies in Tanzania adopt these innovations rapidly while others remain reliant on manual methods. Understanding these diffusion dynamics illuminates the organisational and social barriers to technology uptake and highlights strategies for encouraging wider, more effective implementation of modern internal audit practices.

2.2 Empirical Review

Globally, a systematic literature review suggests that the use of digital auditing systems enhances the audit quality (Sihaloho et al., 2025). Therefore, the adoption of technology-based techniques like mobile audit tools is associated with completing more audits, finding more risk factors, decreasing audit days, and providing timely recommendations; the same is positively related to an increase in the size of the internal audit function (Eulerich et al., 2022). Similarly, technology awareness in the accounting profession influences its adoption and use (Kim & Crowston, 2011).

A study by Betti et al. (2021) assessed the effects of digitalisation of organisations on internal audit activities and practices in the United States of America, utilizing a quantitative approach, collecting survey data from 150 internal auditors working in Fortune 500 companies. Results indicated that mobile auditing tools improved audit timeliness and accuracy, enabling auditors to access real-time data and perform audits remotely. The use of mobile devices also increased flexibility and communication between auditors and management, leading to more informed decision-making.

The study concluded that mobile auditing tools have become essential for conducting audits efficiently in a fast-paced business environment.

A study by Adegoke and Olawale (2019) examined the impact of mobile auditing tools on internal audit practices in Nigerian financial institutions. The researchers adopted a mixed-methods approach, combining interviews with internal audit managers and survey questionnaires from 200 auditors across banks in Lagos. The study revealed that mobile auditing tools enhanced the auditors' ability to perform real-time audits, thus increasing operational efficiency. However, challenges such as limited technical skills and inadequate mobile infrastructure were highlighted as barriers to full adoption. The researchers recommended enhanced training and investment in mobile technology to maximize the potential benefits of mobile auditing tools in Nigeria's audit environment.

Salum and Matoka (2021) conducted a case study concerning the effect of automated auditing on public organizational performance in Tanzania explore how mobile auditing tools are influencing the internal audit function. Using a qualitative research design, the study involved interviews with 30 internal auditors from different sectors, including manufacturing and services. The findings showed that mobile auditing tools improved audit reporting efficiency and minimized manual errors. However, the adoption rate was low due to challenges such as resistance to change, limited mobile infrastructure, and concerns over data security. The study suggested that increased awareness and investment in mobile technologies could significantly improve internal audit practices in the Tanzanian context.

The study's framework explains the underlying structure regarding both the dependent variable (effectiveness of auditing practice) and the independent variables (audit mobile tools). Principally, the framework is built to explain the expected relationship between the variables. The study hypothesis was developed through assessment of the direct relationship between the audit mobile tools characteristics labelled by accessibility, efficiency, user friendliness, and auditing practice.

III. METHODOLOGY

3.1 Research Design.

The study adopted an explanatory case study design, which allowed the selection of two private audit firms to represent other private audit firms in Tanzania (Asenabi, 2019). Through this design, it was possible for the researcher to identify and predict the causes behind a phenomenon and forecast future occurrences. It was selected for its effectiveness in providing a thorough understanding of causal relationships between variables.

3.2 Study Area

The study was conducted at Assad Associates and Adolph Associates, the prominent internal auditing firms based in Dar es Salaam, Tanzania. These firms specialize in providing internal audit services to a wide range of private companies across various sectors, making it an ideal setting for this research. These firms' extensive experience in auditing and their use of technology in audit practices provided a relevant and practical context for assessing the impact of technology on internal audit practices. The firms' role as key players in internal auditing for private companies ensured that the findings of this study are both applicable and important to the wider auditing profession in Tanzania.

3.3 Population, Sample Size

The target population for this study consisted of all 90 internal auditors working at Assad Associates and Adolph Associates, 53 from Assad Associates, and 37 from Adolph Associates.

3.4 Sampling Procedures

These groups were scientifically justified as the focus because these auditors actively engage with various auditing technologies. By studying this population, the research sought to gather data that is representative of the practical realities and technological advancements in the internal auditing profession. The sample size was calculated by using the following formula adopted from Yamane using all 90 auditors working at Assad Associates and Adolth Associates as a population.

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

$$n = \frac{90}{1 + 90(0.05)^2}$$

$$\text{n} = 73$$

Whereby: n - The sample size, N – Population of study, Error estimate (e) = 5%. Therefore, the study used a total of 73 auditors working at Assad Associates and Adolph Associates as a sample, recruited through purposive sampling techniques, which involve selecting participants who are knowledgeable, skilled, and experienced with mobile

audit tools. This method was scientifically justified for this study as it allowed for the efficient collection of data from skilled and experienced practitioners.

3.5 Data Collection Instruments and Procedures

The study utilized a questionnaire method for data collection, employing a closed-ended questionnaire format. The questions were designed with predetermined response options, specifically using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree," developed by the researcher in consultation with research and audit experts, and then piloted to 10 Auditors to ensure the responses address the research question. This format streamlines data collection by offering respondents clear, specific choices, making it easier to respond and enhancing the efficiency of data analysis. The use of closed-ended questions with a standardized response scale ensured consistency across participants and facilitated straightforward quantitative analysis. This approach was selected to ensure clarity, uniformity, and to maximize the reliability and validity of the research findings.

3.6 Data Processing and Analysis

The collected data were filtered and error-screened before analysis. The researcher employed a combination of descriptive statistics and Structural Equation Modelling (SEM) to ensure a thorough analysis. Descriptive statistics involved calculating means, percentages, ratios, standard deviations, variances, skewness, and kurtosis. SEM was applied to explore relationships between observed and latent variables. For the analysis, Statistical Package for the Social Sciences (SPSS v26) and Smart PLS 4 were employed to ensure precision and efficiency in analysing the collected data.

The combination of descriptive statistics and Structural Equation Model (SEM) ensured a comprehensive analysis of both basic trends and complex relationships in the data. Descriptive statistics provide a clear summary of the data by calculating means, percentages, ratios, standard deviations, and variances, allowing for a straightforward interpretation of the internal auditors' responses. SEM, on the other hand, is particularly suited for this study as it explores relationships between variables, making it ideal for assessing the multifaceted impacts of technology on internal audit practices. Using SPSS v26 for descriptive statistics ensured accuracy and ease in handling large datasets, while Smart PLS 4, known for its capability in handling small and large sample sizes and non-normal data, was well-suited for running SEM models, ensuring precision and efficiency in analysing complex relationships.

3.7 Ethical Consideration

To enhance credibility, this research utilized a well-structured methodology, including a thorough pilot study, to refine data collection instruments and engage relevant respondents. To ensure dependability, the research followed a systematic approach to data collection and analysis, with clear documentation of processes. This included maintaining consistency in the application of data collection tools and procedures throughout the study. Furthermore, employing established statistical methods, such as SEM, provided a strong framework for data analysis, enhancing the reliability of the results.

To achieve confirmability, the researcher employed strategies such as maintaining a clear audit trail of all research decisions, data collection, and analysis processes. This transparency allows other researchers to trace the findings back to the original data and methods used. The efforts to minimize bias, such as involving multiple researchers in the data analysis and interpretation phases, enhanced objectivity. Furthermore, the respondents were informed of the purpose of the study and requested free will of participation. Their identities remained anonymous throughout the study.

IV. FINDINGS & DISCUSSION

4.1 Findings

4.1.1 Homogeneity Tests

To ensure the suitability of the data for analysis, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were conducted using responses from the internal auditors. The KMO value was 0.795, which exceeds the recommended threshold of 0.5, indicating that the sample was adequate for analysis. Bartlett's test produced a Chi-Square value of 1248.803 with 325 degrees of freedom and a significance level of 0.000, confirming that the correlations among the variables were sufficiently large for analysis. These results imply that the dataset collected from the auditors was valid and appropriate for further statistical analysis in addressing the study objective. Table 1 shows the results summary.

Table 1

KMO and Bartlett's Test Results (n=73)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.795
Bartlett's Test of Sphericity	Approx. Chi-Square	1248.803
	df	325
	Sig.	.000

4.1.2 Reliability Test

A scale test for reliability analysis was used to generate Cronbach's alpha from each of the construct's measurement scales. A scale was judged to be reliably measuring its underlying construct if its Cronbach's alpha is equal to or higher than 0.7 (Taber, 2018). The results (Table 4.2) show that all measurement scales were very reliable.

Table 2

Reliability Test Results

Variables	No. of Items	Cronbach's Alpha	Remarks
1. Mobile auditing tools	6	.738	Reliable
2. Effectiveness of internal audit practices	8	.886	Very reliable

4.1.3 Results on Descriptive Statistics

This section presents the descriptive statistics of the variables under investigation in the study. The analysis focuses on four key areas, which are mobile auditing tools and the overall effectiveness of internal audit practices. Descriptive statistics provide a summary of the data by showing the mean, standard deviation, variance, skewness, and kurtosis, which together highlight the central tendency, spread, and distributional characteristics of the responses. These measures are useful for understanding the general patterns of perceptions among the internal auditors before advancing to more inferential analyses.

Table 3

Results on Descriptive Statistics (n = 73)

Variables	Mean	Std. Deviation	Variance	Skewness	Kurtosis
1. Mobile auditing tools	4.1484	.43706	.191	.018	.231
2. Effectiveness of internal audit practices	4.1541	.43875	.193	.716	-.621

The results show that mobile auditing tools recorded a mean score of 4.1484 with a standard deviation of 0.43706, indicating a high level of agreement among respondents regarding their usefulness. The low variance (0.191) suggests that responses were relatively consistent, while the skewness (0.018) and kurtosis (0.231) indicate a near-normal distribution of opinions. These findings imply that internal auditors widely acknowledge mobile auditing tools as effective in supporting internal audit practices, reflecting their growing role in enhancing the efficiency and accessibility of audit processes.

The effectiveness of internal audit practices recorded the highest mean score of 4.1541 with a standard deviation of 0.43875, demonstrating that respondents generally considered internal audit practices to be highly effective. The low variance (0.193) indicates consistency in views, while the positive skewness (0.716) reflects that many respondents gave ratings above the mean. The negative kurtosis (-0.621) suggests that while ratings were favourable, they were more evenly spread around the higher end of the scale. These findings imply that internal auditors perceive their practices as effective, which may be attributed to the adoption and integration of modern auditing technologies in the workplace.

4.1.4 Hypotheses Testing

This section presents the results of hypothesis testing conducted using Structural Equation Modelling (SEM) to determine the relationship between mobile auditing tools (independent variable) and the effectiveness of internal audit practices (dependent variable). The results are summarised in Table .4.

Table 4

Hypotheses Testing Results (SEM Results)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Mobile Auditing Tools -> Effectiveness of Internal Audit Practices	0.333	0.326	0.097	3.435	0.000

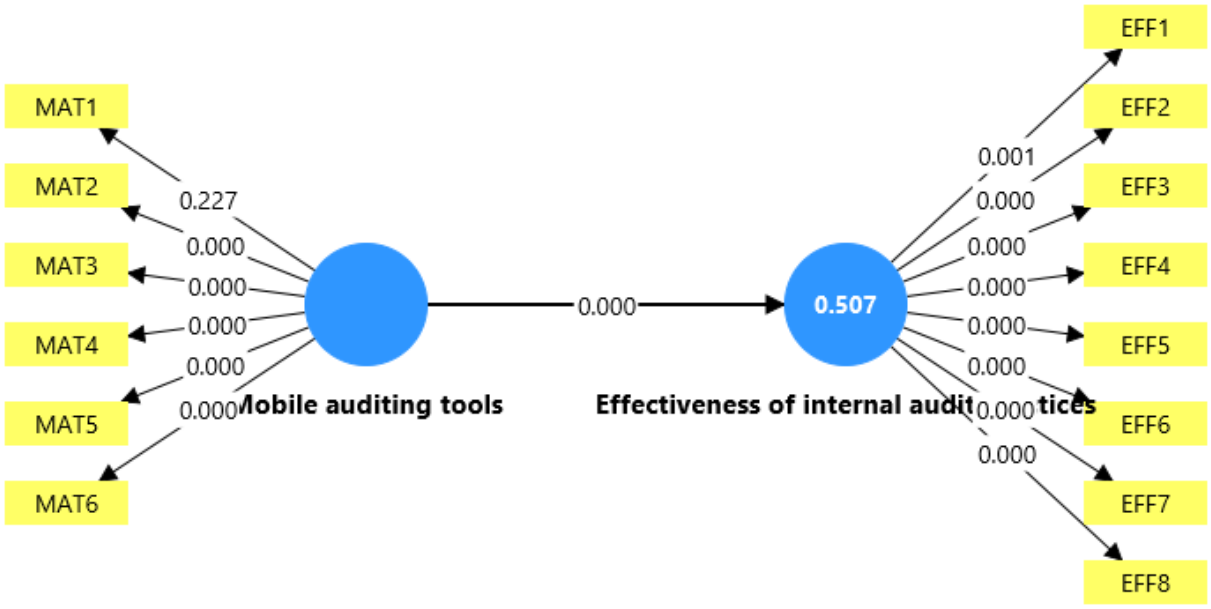

Figure 1
Hypotheses Testing Results (SEM Results)

The results show that mobile auditing tools have a positive and significant effect on the effectiveness of internal audit practices, with an original sample value of 0.333, a t-statistic of 3.435, and a p-value of 0.000. This confirms that the use of mobile-based auditing technologies enhances audit effectiveness, particularly by increasing flexibility, accessibility, and efficiency in audit activities. These results highlight that mobile auditing tools are becoming increasingly valuable in the audit environment, reflecting a broader shift towards technology-driven practices in private companies.

4.2 Discussion

Mobile auditing tools were identified as a significant contributor to audit effectiveness. Their adoption has enhanced flexibility and accessibility, allowing auditors to perform tasks more efficiently and respond to audit needs promptly. The findings suggest that mobile technologies are reshaping internal audit practices by enabling real-time data collection and analysis, thereby improving both accuracy and responsiveness. This reflects a broader trend in the audit profession towards digitalisation, where mobile tools are increasingly seen as indispensable for modern internal audit practices.

The findings of this study align closely with the results of Betti et al. (2021), who established that mobile auditing tools improved audit timeliness and accuracy among internal auditors in the United States. Both studies highlight the value of mobile devices in accessing real-time data and improving communication between auditors and management, which ultimately leads to better decision-making. This similarity suggests that the benefits of mobile auditing tools are not limited to developed economies but are also applicable in the Tanzanian private sector.

The results are also consistent with Adegoke and Olawale (2019), who found that mobile auditing tools enhanced operational efficiency in Nigerian financial institutions. Both studies emphasised that mobile technologies enable auditors to perform audits in real time, thereby increasing responsiveness and overall effectiveness. However, Adegoke and Olawale identified challenges such as limited technical skills and poor infrastructure, which were not strongly evident in the present findings. This difference may be attributed to contextual variations, as Tanzanian private companies in this study appear to have relatively better integration of mobile auditing tools compared to Nigerian banks, where infrastructural limitations posed a stronger barrier.

Moreover, the findings resonate with the conclusions of Salum and Matoka (2021), who observed that mobile auditing tools improved reporting efficiency and reduced manual errors within Tanzanian public organisations. Both studies point to the potential of mobile tools in transforming the audit process by minimising human error and improving accuracy. However, Salum and Matoka reported that adoption remained low due to resistance to change and concerns over data security, whereas the current study indicates stronger acceptance among internal auditors in private companies. This suggests that the private sector may be more adaptable to technological innovations compared to public institutions, where structural and cultural barriers tend to slow adoption.

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusion

The study concludes that mobile auditing tools significantly enhance the effectiveness of internal audit practices. Their adoption improves flexibility, accessibility, and efficiency, allowing auditors to conduct real-time data collection and analysis. This facilitates accurate and timely audit reporting, ultimately supporting more informed decision-making within organisations. The results highlight that mobile technologies are now an essential component of modern internal auditing, reflecting a wider shift towards digitalisation in the profession, hence a need for transformation of auditing practice in Tanzania and Africa in general to enhance flexibility, accessibility, and efficiency in audit practices.

5.2 Recommendations

To enhance the effectiveness of internal audit practices, private companies in Tanzania should prioritise the adoption and integration of mobile auditing tools. Organisations are encouraged to invest in mobile technologies and provide auditors with the necessary training to utilise these tools efficiently. By doing so, auditors will be able to conduct real-time audits, improve report accuracy, and respond promptly to organisational needs, thereby strengthening overall audit performance. Management should also enhance a culture that supports digitalisation, encouraging auditors to embrace technological innovations in their daily activities. As a policy recommendation, there should be legal enforcement for a transformation of auditing practices from traditional to digital. At the institutional level, further study may analyse the cost-benefit of using mobile audit tools in private companies.

Declaration of Interest

The author declares that he does not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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