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Luka Benard Oseko, Dr. Tabitha Nasieku Mereipei, PhD & Dr. Julius Miroga, PhD

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Luka Benard Oseko, [1] Dr. Tabitha Nasieku Mereipei, PhD [2] & Dr. Julius Miroga, PhD [2]

[1] Master Student, School of Business and Economics, Jomo Kenyatta University of Agriculture and Technology, Kenya

[2] Lecturer, Department of Economics, Accounting & Finance, School of Business. Jomo Kenyatta University of Agriculture & Technology (JKUAT), Kenya

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ABSTRACT

This study was formulated to evaluate the role of accounting automation on the performance of audit firms using a case study of the Big Four accounting firms situated in Kenya. The specific objective that guided the study was; to assess the effect of incorporating accounting automation on the performance of the selected four accounting firms in Kenya. The accounting firms selected was the largest in Kenya hence thought to be a representative of the many others. The research adopted a descriptive research design with a target population of 244 accountants cumulative of the four firms. PricewaterhouseCoopers (PwC) comprised of 52 accountants, Ernst & Young (EY) had 61, Deloitte had a total of 74 while in KPMG were 57. The stratified random sampling technique was used to get a total of 152 respondents. Research tools included questionnaires for gathering primary data. For analysis of data it was done quantitatively through inferential and descriptive statistics. The descriptive statistics employed were, mean, frequencies, standard deviation, and percentages. Inferential statistics used were correlation analysis and linear regression. Study findings were presented in graphs, tables and charts. The study results revealed that incorporating automated accounting system enables accountants to easily gather data quickly and accounting employees to work with flexibility anywhere and anytime. The use of automated accounting system had also enhanced affordability of accounting services increasing the demand for accounting services. The automated accounting system leads to easy gathering of data. This study wishes to recommend that all accounting firms consider adopting automated accounting systems must be given priority as accountants reskill themselves to meet the emerging technologies. The use automated accounting systems must include capabilities that ensure all accounting data is correctly and timely recorded.

Key words: Accounting automation*, Performance, Firms, Accountants*

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INTRODUCTION

The current economic environment requires technological dynamism as there seems to be intensive competition hence technological innovations have become unavoidable for the success of organizations (*Schubert et al, 2022*). In cases where a firm may fail to identify or adapt to technology, it may lead to significant missed revenue, work pressure, opportunities, excess expenses, or discontent among consumers (*Chiang et al., 2023*). Incorporating technology leads to increased opportunities due to increase in demand for efficient, accurate, and reliable information from the customers (*Attaran et al, 2022*).

In recent years, the integration of technology into auditing processes has revolutionized the way audits are conducted globally, and Kenya is also aligning itself to adapt the same. Previous, auditing was a labour-intensive and time-consuming process, heavily reliant on manual procedures. However, with the rise of use of digital technologies by many clients/organizations, auditors are compelled to now have access to tools that can streamline data analysis, improve risk assessment, and enhance decision-making processes. The goodness of these tools not only reduce human error but also enable auditors to handle large amounts of data in real-time, offering deeper insights and ensuring compliance with increasingly complex regulatory standards (PwC, 2023).

The audit profession worldwide has undergone significant transformation due to advancements in technology. Auditing technologies for example data analytics, artificial intelligence (AI), blockchain, and cloud computing have the potential to improve audit efficiency, accuracy, and fraud detection (Murphy & Hogan, 2020). Despite the gains accruing to the use of audit technology, many audit firms, especially in developing economies like Kenya, have struggled to adopt these technologies fully (Mwangi & Njeru, 2021). Audit firms in Kenya face a number of barriers, including lack of skilled labour, high implementation costs, and resistance to change (Kamau, 2022).This research aims to explore the challenges facing audit firms in Kenya as they attempt to integrate modern auditing technologies into their practices.

The importance of adopting advanced technologies in auditing cannot be overstated. Technologies like AI can perform repetitive audit tasks, allowing auditors to focus on areas that require higher-level judgment (Smith & Becker, 2022). Additionally, data analytics help auditors handle large datasets, making it easier to spot anomalies that could indicate fraud (Wanjiru, 2020).

Auditing has been and will continue to emphasize on gathering evidence and validation of data available for an opinion. Fraud and theft of data among other malpractices by employees of organizations has made organisations to encrypt their data with high security and difficulty of access without authorization. These new culture has made some audit firms in Kenya face multiple obstacles to adopting technologies that will enable them unearthing such vices and transiting to new mode data storage. Some of the obstacles include high costs of procuring and maintaining the technology, lack of expertise that prompt for frequent training, regulatory compliance issues, and resistance to change by audit staff who does not want to learn how to use technology.

Statement of the Problem

The accounting and auditing industry is one of the sectors where digitalization is most likely to accelerate thus necessitating technological knowledge (Mohammed & Ebo, 2023). The industry of accounting is expected to become increasingly automated thus each player must prepare for this transition by updating their technologies, Amirul et al., 2020. The Big four selected audit firms have been in the forefront in the use technology as a way of enhancing their work and improving efficiency. Despite the numerous benefits auditing technologies offer in improving accuracy, efficiency, and fraud detection, their adoption in Kenya remains slow. This informs a conceptual gap for a technological impact on auditing firms as the study focussed on the general businesses. *Muiruri, 2021* in

her study on the effect of technology on the Big Four firms failed to identify the extent technology especially accounting automation had on audit firms perfomance. The previous studies did not highlight any tangible statistical analysis on the impact of accounting automation on audit firms this gap was adressed in this study.

Justification

Documented studies on the accounting firms in Kenya hadn't exhausted all the technologies adopted partly because technology advances or changes often thus, this study sought to fill the gap by investigating the impact of technologies adopted on both the staff and on the performance output in the four accounting firms in Nairobi, Kenya.

Understanding the use of accounting automation will help audit firms, policymakers, and technology vendors design better strategies for overcoming barriers and promoting the adoption of auditing technologies in Kenya. The four Big firms were selected as they are the ones that have incorporated latest technologies hence acting as a mirror 'model' to other audit firms, *Ogutu et al, 2021*

METHODOLOGY

Study Design

The study adopted a descriptive research design. A mixed-method approach was also used, combining both qualitative and quantitative methods to gather comprehensive data.

Target Population

The total target population comprised the documented 244 accountants from the four selected firms. Ernst & Young (EY) had 61, Deloitte had 74, KPMG had a total of 57, finally PricewaterhouseCoopers (PwC) documents 52 accountants (Financial Times, 2023).

Sample Size and Sampling Procedure

Purposive sampling method was used to select participants who have direct experience or involvement with auditing technologies. A target of 152 participants from the Big Four firms in were contacted, ensuring a range of perspectives from different levels of the organization.

Data Collection & Analysis

Data was analyzed by using statistical methods where classifications and tabulations were used to summarize data. Quantitative data analysis will be used for data analysis using descriptive statistics such as percentages and means with the help of Statistical Package for Social Sciences (Version 25). Qualitative data was analyzed thematically to identify common challenges and trends.Correlations and Regression analysis were used to establish the relationship between variables. Multiple regression models were used to establish the relationship between independent variables on dependent variable through computation of the regression coefficients of linear function

RESEARCH FINDINGS

Response Rate

A total of 152 respondents formed the sample population. Of this, 132 respondents correctly filled the questionnaires thus the rate of response was 86.8%. This rate is considered sufficient as per Mugenda and Mugenda (2021), that indicated a 50% rate of response is enough in analyzing.

Table 1: Cumulative rate of response

Category	Frequency	Percentage (%)
Responded	132	86.9
Did not respond	20	13.1
Total	**152**	**100.0**

Gender Group

In response 53% of the respondents were male, while 47% were females indicating fair involvement of both gender.

Table 2: Gender

Gender	Frequency	Percentage
Male	71	53.0
Female	61	47.0
Total	132	100.0

Age for Respondents

The results showed that 37.9% of those who responded were between 31 and 40 years, 37.1% fell between 41 to 50 years, 15.9% were 21-30 years, while 9.1% were aged 50 years and above.

Table 3: Age of Respondents

Age group	Frequency	Percentage
21-30 years	20	15.9
31-40 years	51	37.9
41-50 years	48	37.1
Above 50 years	13	9.1
Total	**132**	**100.0**

Education Level of Employees

In the question of highest education qualification achieved, results indicated that 46.2% respondents had a first degree, 38.6% had a master's degree, while 15.2% held a doctorate. This indicated that most respondents were well educated hence in a position to respond to the research subject appropriately.

Table 4: Education Level of Employees

Education Level	Frequency	Percentage
Undergraduate	61	46.2
Masters	51	38.6
Doctorate	20	15.2
Total	**132**	**100.0**

Employee Period of Service

Generally the period of service of an employee is thought to be closely related to their effectiveness in executing duties. In this study 41.7% of the respondents had served between 11-15 years, 17.4% had been in service for above 15 years, 30.3% had served for 6-10 years while 10.6 % had worked for 1-5 years. This indicated that most respondents had been in the accounting firms for a considerable period.

Table 5: Employee Period of Service

Employee Period of Service	Frequency	Percentage
1-5 years	13	10.6
6-10 years	40	30.3
11-15 years	54	41.7
Above 15 years	25	17.4
Total	**132**	**100.0**

Automated Accounting and Performance results

The respondents strongly agreed that internal control put in place by most of the firms for their clients had ensured safeguarding of assets (mean =4.22 std dev = 0.56). The findings concurred with Sorguli et al, (2020) that Internal control promotes quality and completeness of accounting records.

The study established that internal controls put in place by most firms for their clients have led to reliability in financial reporting (mean =4.14 std dev = 0.68) , effectiveness and efficiency of operations (mean =4.14 std dev =0.63). De Reuver et al, (2022) concluded so by asserting that automated accounting systems give a variety of advantages and may improve the firm's chances of survival.Internal control has led to better containment of frauds and errors (mean =3.98 std dev =0.71) as concluded also by Oussii et al, (2022) that automated accounting systems guarantee safety of assets, safeguards against fraud and mistakes. Another finding from the study was that accounting firms had put in place internal control that was reliable and compliant with applicable laws and regulations (mean = 3.94 std dev =0.72).

Table 6: Automated Accounting and Internal Control

	N	Min	Max	Mean	Std Dev
Internal control in our firm has led to better safeguarding of assets	132	3.00	5.00	4.22	0.56
Use of internal control in our firm has led to better prevention and detection of frauds and errors	132	3.00	5.00	3.98	0.71
The internal control that our firm has put in place for our clients has led to reliability in financial reporting	132	3.00	5.00	4.14	0.68
The internal control in our firm is reliable, compliant with applicable laws and regulations	132	3.00	5.00	3.94	0.72
The internal control our firm has put in place in place for our clients has led to effectiveness and efficiency of operations	132	3.00	5.00	4.14	0.63

In determining the extent to which respondents agreed with the effect of automated accounting system on performance of the Big Four accounting firms in Kenya, results revealed that putting in place an automated accounting system had enabled accountants accumulate data and information easily (mean = 4.28 std dev=0.45). The findings support those of Sorguli et al, (2020) that computerized financial records need same internal control principles of separation of duties. The automated accounting system when in place enables accounting staff to work from everywhere and anytime (mean = 4.20 std dev =0.78) .Finally automated accounting system has enhanced work efficiency in most accounting firms (mean = 4.20 std dev =0.61). Kewo et al, (2020) reported that internal control systems, financial and administrative control are critical for proper running of a firm as per this study (mean = 3.92 std dev =3.92). From the results, automated accounting system in place has enhanced productivity of staffs in the Big Four accounting firms in Nairobi (mean = 3.90 std dev =0.69). Smith (2021) concurred with this by reporting that the adoption of computerized accounting in businesses can have a number of advantages. It assists the consultant to do work more efficiently using automation and the results in reduction of manual handling.

Table 7: Automated Accounting and Efficiency of Operations

	N	Min	Max	Mean	Std Dev
Automated accounting system in place has enhanced work efficiency in my firm	132	3.00	5.00	4.20	0.61
The automated accounting system in place has enhanced productivity of staffs in my firm	132	3.00	5.00	3.90	0.69
Automated accounting system in place leads to timely completion of accounting work in my firm	132	3.00	5.00	3.92	0.75
The automated accounting system has enabled our staffs work from anywhere	132	3.00	5.00	4.20	0.78
The automated accounting system in place has enabled our accountants gather data and information easily	132	4.00	5.00	4.28	0.45

The research also set out to determine how respondents viewed the effect of automated accounting system on the performance of the Big Four accounting firms. Results showed that the majority of respondents agreed when automated accounting system is in place it increased the level of objectivity with clients (mean = 4.23 std dev =0.61). This supports findings by Taipaleenmaki et al, (2020) that through computerization, new services become more significant, resulting in a larger number of consumers. The study established that an automated accounting system in place led to improved clients' relations (mean = 4.22 std dev =0.73) and helped the current customers (mean = 4.14 std dev=0.58).

An automated accounting system in place has led to affordability of accounting services for the clients (mean =4.02 std dev =0.74) also that automated accounting system has increased the demand for accounting services in accounting firms (mean = 3.86 std dev =0.73). These findings correlate the study by Hunton (2021) that said the use of automated accounting increases contact with customers leading to stronger client relationship.

Table 8: Automated Accounting and Client relations

	N	Min	Max	Mean	Std dev
An automated accounting system in place improves our organization clients' relations	132	3.00	5.00	4.22	0.61
Automated accounting system in place has increased the demand for accounting services in our firm	132	3.00	5.00	3.86	0.73
The automated accounting system in place has raised the level of objectivity with our clients	132	3.00	5.00	4.23	0.73
The automated accounting system in place has led to affordability of accounting services for our clients	132	3.00	5.00	4.02	0.74
Automated accounting system in place has assisted retain new and kept the current customers	132	3.00	5.00	4.14	0.58

Pearson Correlations

Table 9 shows the findings of correlation test for the dependent variable (performance of the big four accounting firms in Kenya) and the independent variable (accounting automation). There was a positive correlation between accounting automation and performance of the assessed big four accounting firms in Kenya shown by correlation factor of 0.328. The positive relationship was statistically important as the significant value was

0.000 which is less than 0.005. This finding agree with those of Kokina et al (2020) that accounting automation makes services easily accessible to a wider range of consumers and by reducing the number of hours spent on the accounting procedure, the service would become less expensive and attract more customers.

Table 9: Pearson Correlations

		Performance of the Big Four accounting firms in Kenya	Accounting automation **(X2)**
Performance of the Big Four accounting firms in Kenya	Pearson Correlation	1	.328**
	Sig. (2-tailed)		.000
	N	132	132
Accounting automation **(X2)**	Pearson Correlation	.328**	1
	Sig. (2-tailed)	.000	
	N	132	132

Regression Test

Model Summary

Here the R Squared, the determination coefficient (R^2), was 0.108, which means 10.8 per cent of the variances in performance of the big four accounting firms in Kenya were explained by accounting automation.

ANOVA

ANOVA statistics for the study established that the regression model yielded a significance level of 0, an indication that the data was ideal for concluding the population parameters as the value of significance (p-value) was less than 5%. The calculated value of F was 15.679 compared to the critical significance of F, which was 2.49. Thus, the computed value of F was more significant than the critical value indicating that accounting automation impactful on the performance of the big four accounting firms in Nairobi, Kenya. The significance value that was less than 0.05, indicating that the model was substantial too.

Table 10: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.362	1	6.361	15.679	.000[b]
	Residual	52.743	130	.406		
	Total	**59.105**	**131**			

CONCLUSION & RECCOMMENDATIONS

The study revealed that automated accounting system also enabled accountants to gather data and information quickly (mean = 4.28 std dev =0.45). The results are supported by Sorguli et al, (2020) that computerized financial records require the same internal control principles of separation of duties and control. The results further established that the automated accounting system enables accounting staff to work from anywhere and anytime (mean = 4.20 std dev =0.78). The automated accounting systems have enhanced work efficiency in most accounting firms (mean = 4.20 std dev =0.61). These results concur with those by Kewo et al, (2020) that internal control systems and financial and administrative control are critical for the proper running of a firm.

Automated accounting systems have enhanced the timely completion of accounting work in accounting firms (mean = 3.92 std dev =3.92). These findings support Kewo and Afiah (2020) argument that an automated accounting system is intended to give

reasonable confidence about financial reporting accuracy, adherence to applicable rules and regulations, and operational effectiveness and efficiency. Enhanced staff productivity in most of the Big Four accounting firms in Nairobi was observed due to automated accounting systems (mean = 3.90 std dev =0.69). This agrees with Smith (2021) that the the adoption of computerized accounting in businesses can have several advantages like helping consultants to work more efficiently due to automation and the resulting reduction in manual handling.

The study findings show a positive correlation between accounting automation and the performance of the accounting firms studied as shown by a correlation factor of 0.328. The positive relationship was statistically significant as the significant value was 0.000, which is less than 0.005. The calculated value of F was 15.679 compared to the critical importance of F, which was 2.49. Thus, the computed value of F was more significant than the critical value, an indication that accounting automation had a substantial impact on the performance of the accounting firms in Kenya. The significance value was less than 0.05, indicating that the model was important too. From the regression model results, further utilization of accounting automation would enhance the performance of the big four accounting firms in Kenya by 0.454 as noted by Kokina et al (2020) that accounting automation makes services more accessible to many consumers. Accounting firms established in Kenya need to consider adopting accounting internet- related technologies and performance. This enhances higher productivity, quicker data retrieval, data accuracy, real-time integrations, secure file storage, cloud access and professional development.

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