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Audit Quality and Real Earnings Management: Evidence from Big Four and Non-Big Four Audited Firms in Sub-Saharan Africa

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Abstract

The broad aim of this study is to compare real earnings management (REM) between firms audited by Big 4 firms and those audited by non-Big 4 firms in Sub-Saharan Africa. The research design is an ex post facto design. The final sample comprises 230 firm-year observations from three Sub-Saharan African countries, namely Malawi, Nigeria, and Tanzania. Secondary data were drawn from annual reports and financial statements downloaded from the Machame Ratios database. The analysis employed multiple regression techniques, with diagnostic tests such as the Variance Inflation Factor (VIF) and the Hausman test to ensure result stability. Findings indicate a negative effect of both Big 4 and non-Big 4 audited firms on the quality of abnormal operating cash flow. The second hypothesis reveals a positive effect of Big 4 and non-Big 4 auditors on the quality of abnormal production expenditure (APE). The third hypothesis shows a negative effect on the quality of abnormal discretionary expenditure (ADE). Additionally, the study used an alternative REM proxy that sums AOCF, APE, and ADE, in line with prior studies. Results with the alternative REM proxy also confirm a negative effect of Big 4 on REM. Based on these findings, the study recommends several actions: auditors should exercise caution because, despite greater financial reporting transparency brought about by the switch to IFRS, managers still have opportunities to manipulate earnings in other ways. Managers should consider an audit firm's industry specialization when hiring.

Keywords: Real Earnings Management, Abnormal Operating Cash Flow, Abnormal Production Expenditure, Abnormal Discretionary Expenditure, Big 4.

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Introduction

The occurrence of several corporate scandals (e.g., Enron, and WorldCom in the USA; Ahold, Adecco, and Parmalat in Europe; Cadbury, Intercontinental Bank, etc. in Nigeria), the issue of financial reporting quality has continued to dominate the business literature (Alsmairat et al., 2018; Lopes, 2018). Other notable corporations were scandals involving Adelphia, Global Crossing, and Xerox. These business scandals raised concerns about the independence of external auditors (both Big 4 and non-Big 4) and, as a result, the calibre of the audits performed (Bekiris and Doukakis, 2011). This has driven empirical research on the issue of audit quality across several contexts. Studies in western contexts,

e.g., the United States, and the U.K., find that in such environments, auditors face higher litigation risk and therefore more incentivized to constrain earnings manipulation. For instance, Lopes (2018) using a sample of 4,723 firms from 2013 to 2015 finds that the firms subjected to independent scrutiny and evaluation by the Big 4 were far more likely to experience a lower manipulative level than their non-big 4 counterparts. Additionally, the literature documents a switching behaviour from AEM to REM in developed countries following IFRS adoption (Viana, Lourenço and Paulo, 2022). Also, the nature of the regulatory or institutional environment plays a role in enshrining the managerial use of AEM or REM (Kliestik et al., 2021).

Two dominant avenues that managers utilise for earnings management in the literature are either accruals earnings management or earnings management from real activities manipulation (Elrazaz, Elmassri and Ahmed, 2021). Both refer to manipulative activities within the firm with the aim of intentionally misleading investors, they differ in principle (Baksaas and Stenheim, 2019; Elrazaz, Elmassri and Ahmed, 2021). Accrual-based earnings management involves managerial choice and assumptions manipulation within the broad accounting doctrine (Dechow, Ge and Schrand, 2010), in contrast, real earnings management entails a structured calculative approach in business transactions to achieve a perceived favourably reporting (Bereskin, Hsu and Rotenberg, 2018). Regardless of the chosen method, it is perpetrated by managers (Baksaas and Stenheim, 2019). This is because managers are charged with the responsibility of preparing the financial statement of an entity as specified by various company laws.

The literature reports conflicting results regarding big versus non-big 4 companies and earnings management in various geographic situations (Khalil, 2022). The studies by Sitanggang et al. (2019), Chowdhury and Eliwa (2021) in the U.K., Rahman et al. (2022), focused on this issue in the Chinese context, and Carp and Georgescu (2019) studied the idea of earnings management in Romania. Yet others, for instance, Zhan, Her and Chen (2020) in China empirically find evidence of no significant difference in the likelihood of reporting losses and discretionary accruals between big 5 and non-big 5 audit firms. Empirically, Khalil (2022) finds no significant difference in the financial reporting quality of banks that were audited by the Big 4 and Non-Big 4. Few studies have been conducted in the Sub-Saharan African context, according to Anazonwu and Egbunike (2021), there were differences in the big four and non-big four enterprises' anomalous operational cash flows and production expenditures. This may be explained by systemic changes in the institutional environment and environmental incentives that produce variable results in various circumstances (Francis and Wang, 2008; Sitanggang et al., 2019). Salawu (2017) examined a sample of Nigerian financial and non-financial enterprises and discovered evidence of distortion and variation in the firms' profits quality over time.

Therefore, globally the managerial preference for REM has grown considerably from stricter regulation constraining accruals manipulation (Alawag, 2020). For instance, with the implementation of the Sarbanes-Oxley Act (SOX) (Zandi, Sadiq and Mohamad, 2019). According to Zandi, Sadiq and Mohamad (2019), and Al-Hiyari, Kolsi and Muqattash (2022), REM has a long-term effect when

compared to AEM, this may be further compounded in scenarios with weak institutional enforcement, e.g., sub-Saharan Africa. The evidence from the developing or sub-Saharan Africa (SSA) context is however blurred (Abid et al., 2018; Anazonwu and Egbunike, 2021). For instance, Abid et al. (2018) find a non-statistically significant differentiation in the services offered by big versus non-big 4 in a developing country. Recent evidence by Al-Hiyari, Kolsi and Muqattash (2022) using a sample of firms in Middle Eastern and North African (MENA) countries finds that the influence of big 4 categorisations on earnings management was negative and non-statistically significant. These studies have mainly focused on AEM proxies, i.e., discretionary accruals and their performance-adjusted counterpart. Sani, Latif and Al-dhamari (2018), using a Nigerian dataset from 2012 to 2016 and secondary data from a regression analysis found that the Big 4 is positively associated with real earnings management.

Additionally, the transition to IFRS has been previously found to have no significant influence on the quality of the audit (Carp and Istrate, 2019). The literature on the Sub-Saharan Africa context has been largely aggregated along the lines of Big 4 or non-Big 4 on financial performance and accruals earnings manipulation. For instance, Salem, Usman and Ezeani (2021) studied Islamic and conventional banks in the Middle East and North Africa and finds that the big 4 curtailed the earnings management of Islamic banks. Conclusively, from a developing economy context Zandi, Sadiq and Mohamad (2019) find evidence that the Big 4 curbed earnings management with respect to accruals thereby exposing the managers of such firms to increased risk of real earnings management (REM). There is a dearth of empirical evidence on REM in SSA. The main contribution of this study lies in its expanded geographical coverage and the use of different alternative real earnings management proxies to compare the audit quality of big 4 and non-big 4 firms. The novelty of the study is the fact that extensive research using the three REM measures has not been effectively done in the SSA context, therefore this study represents a new direction in EM research and its association with audit quality.

Research Method

The study uses an ex post facto research design. The secondary data for the variables were gathered for the study using Machame Ratios®. This independent online database compiles information on the aforementioned listed African enterprises. Prior investigations have established the reliability of Machame Ratios®. 120 publicly traded non-financial companies were included in the population, and listed on the stock markets in Malawi (Malawi Stock Exchange), Nigeria (Nigerian Exchange Group), and Tanzania (Dar es Salaam Stock Exchange).

Table 1. Firms Included in the Sample by Country

S/No.	Country	Year of IFRS adoption	Number of firms
1	Malawi	2001	15
2	Nigeria	2012	101
3	Tanzania	2004	6

The study utilizes information from annual financial reports of non-financial firms in the selected countries. The study period was chosen to take into account the time after Nigeria implemented the regulations that set the requirement for the adoption of IFRS in 2012. IFRS was adopted in 2012.

Result and Discussion

The study employs the panel fixed effects estimation technique to control for heterogeneity across firms and countries. The study period was from 2012 to 2021. Therefore, we used data from the ten years that followed Nigeria's requirement to implement IFRS. The study employs the following CVs in assessing the relationship between the independent and dependent variables: firm size, leverage, profitability, and operating cash flow. This is consistent with the studies by Chowdhury and Eliwa (2021); Sitanggang et al. (2019) that document that testing this association requires controlling for firm characteristics that also affect the relationship. The independent variable, i.e., Big 4 was measured using a dummy variable (0 for non-big 4 and 1 for big 4).

AOCF = $\alpha 0 + \lambda 1Big4 + \lambda 2FS + \lambda 3LEV + \lambda 4PROF + \lambda 5OCF + \mu it$.....Eq. (1)

APEX = $\alpha 0 + \lambda 1Big4 + \lambda 2FS + \lambda 3LEV + \lambda 4PROF + \lambda 5OCF + \mu it$.....Eq. (2)

ADEX = $\alpha 0 + \lambda 1Big4 + \lambda 2FS + \lambda 3LEV + \lambda 4PROF + \lambda 5OCF + \mu it$.....Eq. (3)

Table 2: Descriptive Statistics of Dependent Variables

	AOCF	APEX	ADEX
Mean	-0.992159	-0.770536	-0.511348
Median	-0.895000	-0.730000	-0.410000
Maximum	5.200000	0.090000	4.830000
Minimum	-12.60000	-6.160000	-12.28000
Std. Dev.	1.113885	0.629808	1.033122
Skewness	-4.568054	-3.836763	-5.894017
Kurtosis	57.68324	28.44043	78.12392
Jarque-Bera	29456.53	6766.775	55416.21
Probability	0.000000	0.000000	0.000000
Sum	-228.1967	-177.2233	-117.6100
Sum Sq. Dev.	284.1293	90.83468	244.4211
Observations	230	230	230

Source: E-Views 10

Key: Abnormal Operating Cash flow (AOCF), Abnormal Production Expenditure (APEX), Abnormal Discretionary Expenses (ADEX).

Table 2 presents the descriptive statistics for three variables, namely AOCF, APEX, and ADEX, based on 230 firm-year observations. The mean values of these variables are all negative, with AOCF recording the lowest mean (-0.992) followed by APEX (-0.771) and ADEX (-0.511). This suggests that, on average, firms experience negative levels across these indicators, which may reflect persistent structural or operational inefficiencies. The median values are close to their respective means, particularly for AOCF (-0.895) and APEX (-0.730), indicating a relatively consistent distribution around the central tendency. However, ADEX shows a slightly higher deviation, with a median of -0.410 compared to a mean of -0.511, suggesting some asymmetry in its distribution.

The maximum and minimum values highlight the presence of extreme observations. AOCF ranges from -12.60 to 5.20, APEX from -6.16 to 0.09, and ADEX from -12.28 to 4.83. These wide ranges suggest significant variability across firms, potentially reflecting heterogeneous operational and financial conditions. The standard deviations reinforce this observation: AOCF (1.114) and ADEX (1.033) exhibit higher dispersion compared to APEX (0.630), implying that the distribution of APEX is relatively more concentrated around its mean.

The distributional properties, as indicated by skewness and kurtosis, reveal substantial departures from normality. All three variables exhibit strong negative skewness (AOCF = -4.568, APEX = -3.837, ADEX = -5.894), implying that the data are heavily left-skewed, with a long tail of extreme negative values. Furthermore, the kurtosis values are exceedingly high (AOCF = 57.68, APEX = 28.44, ADEX = 78.12), indicating extreme leptokurtosis. This suggests that the distributions are sharply peaked with heavy tails, capturing a large concentration of observations near the mean alongside extreme outliers.

The Jarque-Bera statistics confirm the non-normality of all three variables. With values ranging from 6,767 for APEX to 55,416 for ADEX, and p-values of 0.000 in all cases, the null hypothesis of normal distribution is decisively rejected. This indicates that traditional parametric assumptions based on normality may not be fully appropriate for these variables, necessitating either robust estimation techniques or appropriate data transformations in subsequent analyses.

Finally, the sum and sum of squared deviations provide additional insights into the overall scale and variability of the data. The negative sums (-228.20 for AOCF, -177.22 for APEX, and -117.61 for ADEX) are consistent with the negative mean values, reinforcing the tendency of the variables to cluster below zero. The relatively high sum of squared deviations for AOCF (284.13) and ADEX (244.42), compared to APEX (90.83), further demonstrates that the former variables are subject to greater dispersion across firms.

Taken together, these descriptive statistics suggest that the three variables are characterized by significant volatility, negative central tendencies, and pronounced deviations from normality. These features underscore the importance of applying econometric models capable of addressing heavy-tailed and skewed distributions, such as generalized method of moments (GMM) or quantile regression, to derive reliable inferences in the subsequent empirical analysis. In short, it can be seen to the histogram below:

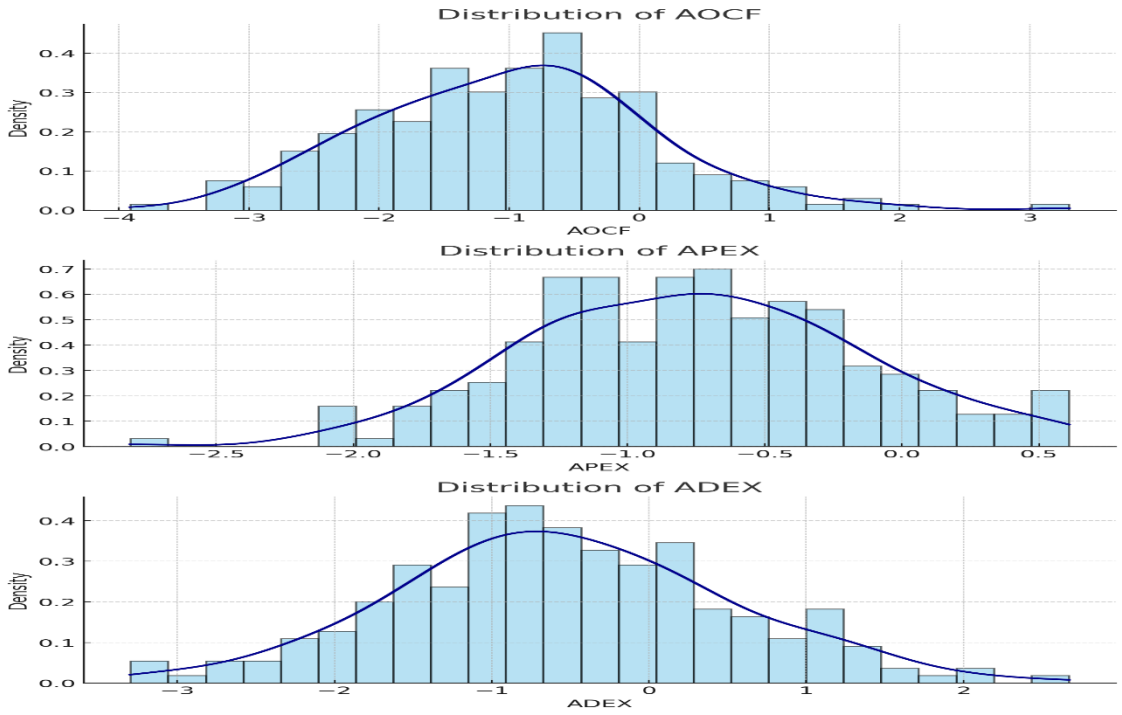

Table 3. Descriptive Statistics of Explanatory Variables

	Big4	FS	LEV	PROF	OCF
Mean	0.734783	5.068478	58.87487	6.028000	0.122304
Median	1.000000	5.270000	58.43000	5.070000	0.130000
Maximum	1.000000	6.910000	172.0900	38.54000	0.460000
Minimum	0.000000	2.600000	12.42000	-37.46000	-0.270000
Std. Dev.	0.442412	1.007077	24.41082	11.31302	0.138398
Skewness	-1.063691	-0.480571	1.272521	-0.229908	-0.210008
Kurtosis	2.131439	2.427115	6.422674	3.929559	2.865501
Jarque-Bera	50.60147	11.99826	174.3394	10.30698	1.863987
Probability	0.000000	0.002481	0.000000	0.005779	0.393768
Sum	169.0000	1165.750	13541.22	1386.440	28.13000
Sum Sq. Dev.	44.82174	232.2528	136458.4	29308.41	4.386279
Observations	230	230	230	230	230

Source: E-Views 10

Key: Big 4 (Big 4 vs. Non-Big 4), FS (Firm Size), LEV (Leverage), PROF (profitability proxied as ROA), OCF (cash flow from operations scaled by total assets).

Table 3 presents the descriptive statistics for the main variables employed in the study, namely audit quality (Big4), firm size (FS), leverage (LEV), profitability (PROF), and operating cash flow (OCF), based on 230 firm-year observations.

The mean value of Big4 auditors is 0.735, with a median of 1.000, indicating that approximately 73% of the sampled firms are audited by Big Four accounting firms. The minimum value of 0 and the maximum of 1 confirm the binary nature of this variable. The relatively high mean suggests that the majority of FTSE-listed firms rely on Big Four auditors, consistent with prior studies highlighting the concentration of audit quality among large audit firms.

Firm size (FS) has a mean of 5.07 and a median of 5.27, with values ranging from 2.60 to 6.91. The standard deviation of 1.01 indicates moderate variation in firm size across the sample. The distribution is slightly left-skewed (-0.48) with a kurtosis of 2.43, suggesting a distribution close to normality but somewhat flatter than the normal curve.

Leverage (LEV) shows a mean of 58.87% with a median of 58.43%, suggesting that firms, on average, finance more than half of their assets with debt. However, the wide range (minimum 12.42% and maximum 172.09%) and a relatively high standard deviation of 24.41 indicate substantial heterogeneity in capital structures across the sample. The skewness of 1.27 and kurtosis of 6.42 reveal that leverage is highly positively skewed and leptokurtic, indicating the presence of extreme values or outliers in debt ratios.

Profitability (PROF) records a mean of 6.03 with a median of 5.07, ranging widely from -37.46 to 38.54. The standard deviation of 11.31 highlights substantial variation in firm profitability. The negative skewness (-0.23) suggests that the distribution is slightly left-skewed, while the kurtosis of 3.93 indicates heavier tails than the normal distribution, pointing to the existence of extreme profit or loss observations.

Operating cash flow (OCF) has a mean of 0.122 and a median of 0.130, with a range from -0.270 to 0.460. The standard deviation of 0.138 shows relatively low dispersion compared to profitability and leverage. Both skewness (-0.21) and kurtosis (2.87) suggest that the distribution of operating cash flows is approximately symmetric and close to normal.

The results of the Jarque-Bera normality test show that Big4, FS, LEV, and PROF deviate significantly from normality (p-values < 0.01), while OCF does not reject the null hypothesis of normality ($p = 0.394$). This finding indicates that most variables are non-normally distributed, largely due to skewness and kurtosis in leverage and profitability, which is consistent with financial data in prior empirical studies.

The descriptive statistics reveal that most firms in the sample are audited by Big Four auditors, maintain relatively large sizes, and rely heavily on debt financing. The wide dispersion in profitability and leverage suggests considerable heterogeneity in financial strategies and performance among the sampled firms. These characteristics provide an important basis for subsequent regression analyses, where non-normality is addressed using robust estimation techniques.

Conclusion

This study provides empirical evidence that significant differences exist in the quality of financial reporting between Sub-Saharan African (SSA) firms audited by Big Four accounting firms and those audited by non-Big Four firms. In the wake of several corporate scandals, debates regarding the comparative quality of financial reporting under Big Four versus non-Big Four audits have intensified across both academic and professional domains. While prior scholarship has primarily emphasized accrual-based earnings management (AEM), particularly in the SSA context, real earnings management (REM) remains an underexplored area requiring further empirical validation. Given the inconsistencies in prior findings, this study focused on publicly listed firms in Malawi (HDI = 0.483), Nigeria (HDI = 0.539), and Tanzania (HDI = 0.529), drawn from the Malawi Stock Exchange, the Nigerian Exchange Group, and the Dar es Salaam Stock Exchange, respectively.

The results demonstrate statistically significant differences in three financial reporting quality metrics abnormal operating cash flow (AOCF), abnormal production expenditure (APE), and abnormal discretionary expenditure (ADE) between Big Four–audited and non-Big Four–audited firms. These findings contribute to the literature on earnings management by adopting multiple proxies of financial reporting quality and by providing new evidence from the perspective of developing SSA economies, with particular emphasis on Nigeria, the region's largest economy.

Based on these findings, several implications are drawn for shareholders, corporate managers, and policymakers. First, auditors are urged to remain vigilant, as the adoption of International Financial Reporting Standards (IFRS) has improved transparency but has not eliminated opportunities for earnings manipulation. Evidence from other jurisdictions also suggests that the transition to IFRS alone does not guarantee enhanced audit quality. Accordingly, audit firms should leverage advanced data mining tools and digital technologies to strengthen their audit practices in the era of digitization. Second, corporate managers are encouraged to carefully consider the industry expertise of prospective auditors when making appointment decisions. Matching auditors with specific industry knowledge are critical, especially in contexts where operations are complex and sophisticated. Third, regulators such as the Financial Reporting Council of Nigeria (FRCN) and their counterparts in other SSA countries should continue to strengthen regulatory frameworks that enhance auditor independence and the broader audit environment. The findings suggest that the presence of Big Four auditors alone is insufficient to constrain all forms of earnings management in developing markets. As a safeguard, shareholders may also consider advocating for the appointment of joint auditors during annual general meetings to mitigate risks associated with managerial opportunism and long-term dependence on particular audit firms.

This study not only advances theoretical and empirical discussions on audit quality and earnings management but also provides actionable insights for practitioners and policymakers in SSA. By

integrating contextual evidence from emerging markets, it underscores the importance of audit independence, industry expertise, and regulatory reinforcement in enhancing the credibility and reliability of financial reporting.

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