Can Big4 Auditors Mitigate the Real Earnings Management? Evidence from Nigerian Listed Firms

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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ABSTRACT

In this study, we examine the impact of Big4 auditors on the real earnings manipulation of listed companies in Nigeria. The paper uses the sample of 80 non-financial companies listed on the floor of Nigerian Stock Exchange for the period between 2012-2016. The data was extracted from the annual reports of the sampled companies and Thomson Reuters Data stream. Using a panel data regression with standard error, the result shows that Non Big4 auditors are more likely to mitigate the real earnings manipulation since they have better knowledge on the local operating environment compared to Big4 auditors. Interestingly, we find that CEO financial expertise plays a significant role in reducing the frequency of real earnings manipulation. The finding informs the regulators and other stakeholders on the roles of local auditors in restraining the trend of real activities manipulation in Nigeria.

Keywords: Real earnings manipulation; Big4 auditors; CEO financial expertise; financial report.

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1. INTRODUCTION

The need for a quality information by shareholders and other stakeholders to take an informed decision has prompted the need for the external auditor to guarantee to shareholders that the annual report prepared by the managers follow the relevant standards and can aid their economic decisions (IAASB, 2015). Auditor has a key role in attesting to the credibility of financial statement. The objective of auditors opinion is to give users, the confidence that the financial statement represents the true economic reality of the firm [1]. Generally, better auditing plays a significant role in increasing the user's confidence on the earnings information. However, the emergence of highly publicised audit failure such as in the case of Enron, WorldCom in the US, Cadbury and Oceanic Bank in Nigeria have raised questions on the quality of the external audit.

Therefore, the quality of financial reports depends on the nature of the external auditors. Prior scholars suggest that Big4 auditors give better assurance on the quality of earnings numbers and constrains the effect of accrual earnings management (AEM) [2,3].

However, evidence on whether Big4 auditors constrain the real earnings management (REM) is still been research. Zang [4] established that unlike AEM, the REM can have a direct consequence on the market value of the firms. Thus, the complexity of REM makes it difficult for the external auditors, investors, and financial analyst to detect and understand. This study examines whether Big4 can detect and constrain the effect of REM of listed companies in Nigeria. We studied Nigeria because about 58% of the listed companies were audited by the Big4 auditors [1]. In addition, most of the companies found with corporate financial scandals have their accounts been audited by the Big4 auditors e.g. Cadbury Nigerian Plc, Afribank Plc, Oando Plc and Oceanic Bank Plc. This study contributes to the extent literature on real earnings management and audit quality (Big4 versus non-Big4). First, to the best of our knowledge, this study is among the earliest that examines the influence of Big4 auditors on REM in Nigeria.

We find that non-big 4 auditors are more likely to minimise the real activities manipulation compared to the Big4 auditors. The remaining part of the paper is as follows, section two presents the literature review and hypotheses development, section three presents data, sample and method. Section four provides discussion of the regression results, and the conclusion is provided in section five.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Earnings Management

Earnings management has been defined by many scholars each with different implication. For example, Schipper [5] defined earnings management as manager's deliberate interference in the reporting pattern of the firm for the ultimate goal of gaining personal benefits. Earnings management is perfected by managers to generate economic benefit at the detriment of other stakeholders which may eventually effect the firms market value [6]. Managers can use their discretion to managed earnings either by accrual or real earnings manipulation. Accrual earnings management (AEM) is the deliberate change in the accounting procedures or estimates used in preparing the financial statement. For example, changes in the method of depreciation, provision of bad debt which are aims at misleading the shareholders [4]. On the other hand, real earnings management (REM) involve the management departures from normal operational practices, purposely to mislead shareholders that the financial statement has been met using the normal operational practice [7]. These include abnormal production to reduce cost per unit and increase the sales level by offering favourable credit terms and decrease in the discretionary expenditure aims at changing the earnings figures and changing the timing of cash flow.

Recent literature has shown a series increase in earnings manipulation through real activities which may have a direct consequence on the future value of the firms [8,9]. As such, it would be interested to determine if Big4 auditors can help in mitigating the trend of real activities manipulations. This is because prior studies on audit quality suggest that Big4 auditors detect and constrain the effect of accrual earnings management [10,11]. However, evidence on the effect of Big4 auditors on real earnings from Nigeria is limited.

2.2 External Auditors and Earnings Management

Generally, the literature on audit quality recognised that external auditors play a

significant role in attesting to the credibility of the financial statement. The external auditors enhance and improve the financial reporting by promoting investors' confidence on the quality of the information provide by managers [1,3]. Stakeholder's theory asserts that the role of auditors is to report to divergent stakeholders, the financial position of the reporting entity [12]. Empirically, prior studies provide contracting evidence on whether the Big4 offered greater credibility on the quality of information contained in the financial report. For example, Dibia and Onwuchekwa [13] suggest that Big4 auditors provide quality financial reports in comparison to local firms. Furthermore, evidence documents by Al-Hiyari, Abdul Latif and Amran [14] demonstrate that Big4 auditors help in enhancing and predicting firms cash flow. Also, Alzoubi [15] indicates that firms audited by Big4 auditors have less earnings management compared to firms audited by non-Big4 auditors.

On the other hand, some scholars established that firms audited by Big4 auditors are more likely to be associated with higher earnings management. For example, Ishak, Amran and Manaf [16] studied audit quality and real earnings management of listed companies in Malaysia, the authors established that Big4 auditors could not mitigate the frequency of real earnings manipulation. In Nigeria, Bala et al. [1] affirmed that Big4 auditors are more associated with accrual earnings management. According to them, local auditors seem to be more familiar with the local business environment and provide better earnings quality compared to the Big4 auditors. In contrast, Yaşar [17] and Al-Rassas and Kamardin [18] demonstrate that Big4 auditors do not reduce the likely earnings manipulations and hence there is no difference in AQ between Big4 and non-Big4 auditors. Building on the stakeholder's theory, this study hypothesises that:

H1: Big4 auditors are negatively related to real earnings management

2.3 CEO Financial Expertise and Earnings Management

Knowing that corporate strategies are taken by the Chief Executive Officer (CEO hereafter), the Nigerian Securities and Exchange Commission recognised the CEO as the highest ranking officer saddled with the responsibilities of selecting appropriate accounting policies and

provides what information should be disclosed on the financial report [19]. As a result, companies continued to search for experienced managers to spearhead their organisations. Financial expertise has been suggested as one of the attributes that assist the CEO in managing the resources of the firm [20]. Resources dependency theory asserts that CEOs with divergent skills and experience are expected to improve the decision making of the firms and invariably enhance the reporting quality. Hence, CEO with financial expertise can play an essential role in overseeing the accounting process [21]. Empirically, prior studies such as Abdul Latif, Taufil Mohd, and Kamardin [22], Baatwah et al. [21], Jiang, Zhu and Huang [23] have confirmed that financial expertise CEOs' lessens the frequencies of earnings manipulation and enhance the reporting quality. Therefore, CEOs with more financial knowledge are more likely to use their expertise to improve the reporting earnings. Building on the resources dependency theory, this study hypothesises that:

H2: CEO financial expertise is negatively related to real earnings management.

3. METHODOLOGY

Our population comprised of all the 170 listed companies in Nigerian Stock Exchange for the period starting from 2012-2016. Table 1 provides the sample selection procedure. From the total of 170, 55 banks and other financial service institutions were excluded, during the period, 14 companies were delisted by the Nigerian Stock Exchange. Also, 9 firms from Alternative Securities Exchange Market (ASEM) were eliminated [1]. Finally, 12 companies with incomplete information were dropped to arrive at the final sample of 80 companies making a total number of 400 firm-year observation. Data on real earnings management, return on asset, tangibility and leverage were taken from the Thomson Reuters Data Stream. Data on Big4 and CEO financial expertise were extracted from the annual report of the sample companies.

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[1] *ASEM is a market mainly for small and entrepreneurial businesses with different listing requirements essentially registered to raise capital for growing their business to become a publicly listed company. In addition, the financial reporting of these companies differs from the general population.*

Table 1. Sample selection procedure

	No	No
Firm listed on Nigerian Stock Exchange as at 31/12/2016		170
less		
Financial Services companies	55	
firms from Alternative Securities		
Exchange Market	9	
Dead and delisted firm during the period	14	
Firms without complete data on CEO ownership, expertise and tenure.	12	90
Firms in the final sample		80
Number of years		5
Firm-year observations		400

4. MODEL SPECIFICATION AND VARIABLES MEASUREMENT

As in the studies of Braam et al. [24] and Zang [4], this study estimated the REM using the three sub-component models as suggested by Roychowdhury model [7], that is, abnormal cash flow from operations and abnormal discretionary model and abnormal production cost, The estimate of each model is stated below

Abnormal Cash flow (Ab_CFO)

For the estimation of abnormal cash flow from operations (Ab_CFO), the following normal cash flow formula is used. First, we run the following cross-sectional regression for every firm-year.

$$\frac{CFO_{it}}{Asset_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{Assets_{it-1}} + \alpha_2 \frac{Sales_{it}}{Assets_{it-1}} + \alpha_3 \frac{\Delta Sales_{it}}{Assets_{it-1}} + \epsilon_{it} \tag{1}$$

CFO_{it} = operating cash flow for firm i and in year t.
$Asset_{it-1}$ = represents lagged total asset.
$Sales_{it}$ = is current year sales
$\Delta Sales_{it}$ = changes in total sales i.e. current year sales - last year's sales. While ϵ_{it} represents the error term.

The difference between the actual cash flow (ACT-CFO) and normal cash flow is known as abnormal cash flow from operation and is determine using the following formula.

$$Ab\_CFO_{it} = \frac{CFO_{it}}{Asset_{it-1}} -- \alpha_0 + \alpha_1 \frac{1}{Assets_{it-1}} -- \alpha_2 \frac{Sales_{it}}{Assets_{it-1}} - \alpha_3 \frac{\Delta Sales_{it}}{Assets_{it-1}} -- \epsilon_{it} \tag{2}$$

Thus, the abnormal level of CFO is the predicted residual from eq. (2) for every firm- year observation. Consistent with Cohen and Zarowin [9], we multiply the predicted residual with a negative -1 to get the final Ab_CFO. (so that the higher the amount, the more likely that the firm is cutting the CFO).

Abnormal Discretionary Expenses (Ab_DEXP):

DEXP is constructed as sum of selling, general and administration expenses, research and development and advertisement expenses. Thus, the following cross section regression (CSR) are run for every industry and year.

$$DEXP_{it} = SGA_t + R \& D_t + AVD_t \tag{3}$$

Where
SGA= Selling general and Administration and
R&D = Research and Development expenditure
AVD = Advisement expense

Next, we run the following regression to get the normal DEXP:

$$\frac{DEXP_{it}}{Asset_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{Assets_{it-1}} + \alpha_2 \frac{Sales_{it-1}}{Assets_{it-1}} + \epsilon_{it} \tag{4}$$

$DEXP_{it}$ = Sum of selling, marketing, administrative and advertising expenses.
$Assets_{it-1}$ = lagged total asset,
$sales_{it-1}$= lagged sales
and finally ϵ_{it} = error term.

The abnormal DEXP is the difference between actual discretionary expenses and the estimated discretionary expenses as in eq (5).

$$Ab\_DEXP_{it} = \frac{DEXP_{it}}{Asset_{it-1}} - \alpha_0 + \alpha_1 \frac{1}{Assets_{it-1}} - \alpha_2 \frac{Sales_{it-1}}{Assets_{it-1}} - \epsilon_{it} \tag{5}$$

Thus, Ab_DEXP is the predicted residual from eq. (5) for every firm- year observation. Consistent with Cohen, Dey and Lys [8], we

multiply Ab_DEXP a by negative one (-1) to generate the final Ab_ DEXP. The higher the level of residual, the possibility that management managed their earnings through real activities manipulation.

Abnormal Production Cost (PROD)

Production cost is the sum of cost of goods sold (COGS) and changes in inventory (Δ Inv) for the year. The model is detail below

$$\frac{COGS_{it}}{Asset_{it}\text{-}1} = \alpha_{0+}\alpha_1 \frac{1}{Asset_{it}\text{-}1} + \alpha_1 \frac{Sales_{it}}{Asset_{it}\text{-}1} \text{€ it} \tag{6}$$

Next, the changes in inventory is measured using the following regression:

$$\frac{\Delta Inv}{Asset_{it}\text{-}1} = \alpha_{0+}\alpha_1 \frac{1}{Asset_{it}\text{-}1} + \alpha_2 \frac{Sales_{it}}{Asset_{it}\text{-}1} + \alpha_3 \frac{\Delta Sales_{it}\text{-}1}{Asset_{it}\text{-}1} + \text{€ it} \tag{7}$$

Using e.q 6 and 7, the normal level of production is estimated as:

$$\frac{PROD_{it}}{Asset_{it}\text{-}1} = \alpha_0 + \alpha_1 \frac{1}{Assets_{it}\text{-}1} + \alpha_2 \frac{Sales_{it}}{Assets_{it}\text{-}1} + \alpha_3 \frac{\Delta Sales_{it}}{Assets_{it}\text{-}1} + \alpha_4 \frac{\Delta Sales_{it}\text{-}1}{Assets_{it}\text{-}1} + \text{€it} \tag{8}$$

Thus, to compute abnormal production, we use the following equation.

$$Ab\text{-}PROD_{it} = \frac{PROD_{it}}{Assets_{it}\text{-}1} - \alpha_0 + \alpha_1 \frac{1}{Assets_{it}\text{-}1} - \alpha_2 \frac{Sales_{it}}{Assets_{it}\text{-}1} - \alpha_3 \frac{\Delta Sales_{it}}{Assets_{it}\text{-}1} - \alpha_4 \frac{\Delta Sales_{it}\text{-}1}{Assets_{it}\text{-}1} \text{€it} \tag{9}$$

The abnormal production cost (Ab_PROD) is the difference between the actual and the normal production costs estimated using equation (9) for every firm year observation. Thus, Ab-PROD is the predicted residual from the eq (9). High level of Ab_PROD is an indication that firms managed its earnings through overproduction leading to a decrease in the cost of goods sold.

4.1 Real Earnings Management Matric

Consistent with Baatour, Ben Othman and Hussainey [25] and Braam et al. [24], we take the aggregate from the three components i.e. equation 2, 5, and 9 to arrive at a single variable (REM).Therefore, real earnings management is mathematically calculated as follows. REM= Ab_PROD + Ab_CFO+ Ab_DEXP

4.1.1 Empirical model

To test our hypotheses, we employed the following empirical model to examine the influence of Big4 auditors on the real earnings management using Stata 14.

$$REM = \beta + \beta_1 Big4_{it} + \beta_2\ CEOEX_{it} + \beta_3 LEV_{it} + \beta_4 TANG_{it} + \beta_5\ ROA_{it} + \text{€it} \tag{1}$$

Where REM= real earnings management, Big4 = Big 4 auditors (KPMG, Deloite, Price Water Coopers, Ernst & Young), LEV= leverage, TANG = tangibility, ROA= return on Asset, β= regression coefficients and i= firm, t= time and €= error term. Finally, the explanation and measurement of study variables is presented in Table 2.

Table 2. Variables measurement

Variable	Acronym	Definition	Source
Real Earnings Management	Rem	Sum of abnormal Production, discretionary expenses and cash flow from operation	Roychowdhury, 2006; [7] Zang, 2012 [4] and Braam et al. [24] (2015)
Big4 auditors	Big4	Dummy variable of 1 if firm is audited by any of the big4 auditing firm otherwise 0	Alquhaif, Abdul Latif and Chandren (2017) [26]
CEO Expertise	CEOEXP	A dummy variable that takes the value of 1 if CEO has the accounting, business or finance related qualification, and value of 0 if otherwise	Abdul Latif, Taufil Mohd, AND Kamardin [22](2016)
Leverage	LEV	Interest bearing liabilities to total asset	Ajay and Madhumathi (2015) [27], Al-dhamari and Ku Ismail (2014) [28]
Tangibility	TANG	Proportion of non-current asset to the total asset of the firm	Al-Jaifi (2017) [29], Garba and Mohamed (2018) [30]
Return on Asset	ROA	Net income after tax divided by total asset	Miko and Kamardin (2016) [31]

5. RESULTS AND DISCUSSION

5.1 Descriptive Statistics

Table 3 presents descriptive statistics for the studied variables. The mean, minimum and maximum value of REM are 0.299, -1.969 and 4.632, respectively, with a standard deviation of 0.716. The mean of 0.299 indicates the existence of real activities manipulation across the listed firms in Nigeria. With respect to external auditors (Big4), the descriptive result indicates an average mean of 0.548, suggesting that 55% of listed firms are audited by Big4 auditors.

Table 3 also indicates the mean value of CEOEX as 0.838, an indication that CEO with financial expertise accounted for 84% of listed companies in Nigeria. With respect to control variables, the mean value for LEV is 0.55, indicating that 55% of total assets is finance by external finance, the average value for Tang is 0.470 while ROA is 0.057.

5.2 Univariate Analysis

Table 4 presents the correlation coefficients of the variables used, the coefficients reveals that Big4 has a significant positive coefficient with REM at 1%. However, the correlation coefficient reveals that CEOEX has a strong negative relationship with REM at 1% level. Table 4 also reveals LEV and ROA have significant positive correlation with REM all at 1% level. However, the result of TANG is negative and significant with REM at 5% level. Finally, to confirm whether the data is free from multicollinearity problems, the VIF results presented in Table 4 show that none of the VIF value is higher than the threshold of 10. Thus, implying that the level of multi collinearity might not pose a problem on the outcome of this results.

5.3 Regression Results

Table 5 report the regression results of Big4 auditors and REM with the control variables, the coefficients were estimated using the panel data standard error (Driscoll-Kraay Standard Error). Driscoll-Kraay model was employed because our data set is characterised with heteroscedasticity, autocorrelation and contemporaneous correlation, see Table 5. The method was suggested to correct the problem of heteroscedasticity, auto and contemporaneous correlation [32]. The regression result shows that Big4 auditors have a strong positive influence on real activities manipulation (β 0.372, P=0.000) at 1% level. This finding implies that non-Big4 auditors are more effective in constraining the frequencies of real activities manipulation. The possible reason might be that non-Big4 auditors are less busy and can dig more into the books and account of their client. In addition, non-Big4 auditors are more familiar with the local business environment. The findings are consistent with Bala et al. [1] who alleged that Big4 auditors are associated with higher earnings management than non-Big4 auditors. The findings are also similar to the result of Ishak, Amran and Manaf [16] who found that firms audited by Big4 auditors are more associated with earnings manipulation. In contrast, the results contradict the stands of Alzoubi [33], Chi, Lisic and Pevzner [34] that Big 4 auditors mitigate the effect of earnings manipulation of companies listed on Jordan Stock Exchange.

Table 5 shows that CEOEX has a strong negative relationship with real activities manipulation (β -0.356, P=0.000). This suggests that CEO with financial expertise minimise the occurrence of real earnings manipulation, the results is in support of resources dependency theory that CEO with financial expertise help in providing the needed skills and experience to minimise the frequency of managerial entrenchment. The finding is also consistent with previous studies which demonstrate that CEO financial expertise reduces the possibilities of earnings management, irregularities in the firm and delivered financial report of better quality [21,23].

Table 3. Descriptive statistics

Variable	OBS	Mean	Minimum	Max	SD
REM	400	0.299	-1.969	4.632	0.716
BIG4	400	0.548	0.000	1.000	0.498
CEOEX	400	0.838	0.000	1.000	0.369
LEV	400	0.559	0.007	2.486	0.289
TANG	400	0.470	0.004	3.087	0.275
ROA	400	0.057	-0.903	0.544	0.123

Note. REM= Real earnings management; Big4= Big4 auditors; CEOEX =CEO expertise; LEV = Leverage; TANG= Tangibility; ROA = Return on assets.

Table 4. Correlation matrix of the study variables

Variable	REM	AQ	CEOEX	LEV	TANG	ROA	VIF
REM	1						
Big4	0.3490***	1					1.08
CEOEX	-0.1586***	0.0488	1				1.01
LEV	0.1504***	0.1312***	-0.077	1			1.1
TANG	-0.2502**	'-0.1196**	0.0155	-0.0256	1		1.02
ROA	0.3209***	0.1727***	0.0898*	-0.2297***	-0.0894*	1	1.12

*Note. REM= Real earnings management; Big4= Big4 Auditors; CEOEX =CEO financial expertise; LEV = Leverage; TANG= Tangibility; ROA = Return on assets *** significant at 0.01 level, *** significant at 0.05 and * at 0.1 level*

Table 5. Driscoll-Kraay std. error regression

REM	Coef	Std err.	t-stat	p-value
Big4	0.372	0.015	24.770	0.000***
CEOEX	-0.356	0.028	-12.540	0.000***
LEV	0.421	0.038	10.980	0.000***
TANG	-0.479	0.050	-9.600	0.000***
ROA	1.834	0.190	9.650	0.001***
Constant	0.277	0.051	5.400	0.006***
R Square	0.292			
Prob>F	0.000			
Breusch and Pagan LM test	0.000			
Hausman test	0.000			
Modified Wald Heteroskedasticity	0.000			
Wooldridge Autocorrelation	0.000			
Pesaran's cross sectional independence	0.012			

*Note. REM= Real earnings management; Big4= Big4 Auditors; CEOEX =CEO financial expertise; LEV = Leverage; TANG= Tangibility; ROA = Return on assets. *** sig at 1%, ** at 5% and * 10% sig level.*

With respect to control variables, this study finds that LEV and ROA have significant positive influence on real activities manipulation. This signifies that high leverage encourages management desire to manipulate the reporting earnings through real activities. This is consistent with Valipour and Moradbeygi [35] that debt has a negative influence on the earnings quality of firms listed on Tehran stock exchange. Likewise, the positive coefficient of ROA and REM suggests that profitable firms are more likely to manipulate their real activities to report consistent profit and maintain their profit status in the capital market. Table 5 also shows a strong negative coefficient between TANG and REM, an indication that firms with high investment in fixed assets have less real earnings manipulation.

5.4 Robustness Checks Using t-test between Big4 and non-Big4 Auditors

In the main analysis, we discovered that non-Big 4 auditors perform better in comparison to the Big4 auditing firm. To confirm this finding, we conducted a t-test to determine the extent of real earnings management between Big4 and non-Big4 auditors. Interestingly, the result as displayed in Table 6 shows that firms audited by Big4 auditors are associated with higher earnings management compared to the local auditors. The possible explanation for this result is that non-Big4 auditors are more familiar with the local business environment and could dig more to avoid be sanctioned by the regulatory agency.

Table 6. Comparison between Big4   vs non-Big4 firms

	Observation	Mean	std. Err	Std. Dev
Non Big4	181	0.025	0.046	0.622
BIG4	219	0.526	0.048	0.710
Combine	400	0.299	0.036	0.716
Diff		-0.501	0.067	
T-value		-7.429***		
P-value		0.000		

6. CONCLUSION

Unlike accrual earnings management (AEM) which can easily be detected by auditors and regulators, the efforts of auditors to detect and minimise the REM have been a subject of controversies among researchers. This study examines the influence of Big4 auditors on the real earnings management of listed companies in Nigeria. We find that Big4 auditors are positively related to REM. This suggests that Big4 are less likely to detect and report the real earnings manipulation compared to non-big4 auditors who have the requisite knowledge on the local business environment.

On the other hand, we find significant evidence that CEO with financial expertise mitigates the effect of real earnings manipulation in Nigeria. The finding is consistent with the position of the Nigerian code of corporate governance that CEO is expected to use his/her skills to select the appropriate accounting policy, thus, improve the reporting quality. The study informs the regulators that unlike AEM, the complexities of REM cannot be detected by the Big4 auditors. Thus, we recommend that more emphasis should be given to internal control mechanisms such as financial expertise and experience of Chief Executive Officers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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