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CEO Gender Diversity and Financial Expertise of Nigerian Oil and Gas Companies: Do They Affect Real Earnings Management?

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Abstract
This study examined the influence of chief executive officers gender diversity and financial expertise on real earnings management of listed Nigerian oil and gas companies from 2013 to 2022. In specific, the study answered questions relating to the influence of chief executive officer gender diversity and financial expertise on real earnings management. To provide answers to the questions, secondary data were obtained for 10 listed oil and gas companies in Nigeria. Panel data regression (panel corrected standard error fixed effect model) was used because the variables of the study had time series and cross-sectional data attributes. Findings indicated that chief executive officer gender diversity and financial expertise had significant influence on real earnings management. Consequently, the study concludes that financial expertise and gender diversity are major drivers of real earnings management. On this note, the study recommends that more females should be appointed as CEO positions as they tend to reduce and avert real earnings management practices to a very large extent. Also, those that have the authority to appoint CEOs should consider people with financial expertise to emerge as CEOs.

Keywords: *CEO gender diversity; CEO financial expertise; Real earnings management; Oil and gas companies*
JEL Classification: M41; M49

1. INTRODUCTION

The overall aim of financial reporting is to reflect the actual financial position of firms, which in turn helps the users of financial statements, make their decisions based on relevant information. Financial information, however, can be distorted or manipulated through several accounting treatments exercised by firm's managers to meet specific benchmarks or analysts' forecasts. The treatments are called earnings management (EM), where Chief executive officers and managers try to mislead stakeholders regarding the real financial performance of their firms (Ifeanyichukwu & Ohaka, 2019).

The rationale behind the above assertion is based on the fact that, a firm's chief executive officer (CEO) has the authority to access all relevant information regarding the firm's operations and activities. This superiority of information increases the CEO's ability to manage earnings (Edwin & Benjamin, 2017). This is however a deviation from the strategic roles of assisting the firm to vigorously track opportunities, regulate the structures and policies, protect the interest of investors, and ensures that, the firm's financial statement conveys credible and reliable information that can attract and confidence of different user groups (Ifeanyichukwu & Ohaka, 2019).

Furthermore, various CEO attributes as espoused in accounting literature include but not limited to CEO ownership, CEO duality, CEO Gender diversity, and CEO Financial Expertise, CEOs‘ political connections. Evidently, Satriyo and Harymawan (2018) suggested that, liberated Chairmen and CEOs are less susceptible to real earnings management. Shaki, Falack, Maurice and Bassey (2020) noticed that a dual CEO-Chairman position contributed to the management of earnings, especially when the CEO-Chair held a large proportion of the equity in the company.

In relation to earnings management, Seyaningrum, Sekarsari and Damayanti (2019), women CEOs are less involved in earnings management than male CEOs. This is because women are more careful, avoid risk and have higher ethical standards, consequently they can reduce motivation to carry out earnings management. This however, cannot be said to be true in all cases. Again, a CEO‘s financial knowledge is essential in assessing the reliability of financial statements since they are likely to learn more about financial and accounting issues from their management skills and expertise in their fields (Imade, 2019). Therefore, they may engage in a financial report using their professional judgement or the design of actual transactions to modify accounting information (Martín-Ugedo, Mínguez-Vera, & Palma- Martos. 2017).

As such, the possibility of high real earnings management tendencies can be reduced. Qi, Lin, Tian and Lewis (2018) and Omah (2023) are of the view that, the corporate scandals involving Enron in 2001, WorldCom in 2001, Parmalat in 2003, and Lehman Brothers in 2008, Satyam in 2009, Tesco in 2014, Toshiba in 2015, falsification of financial reports by management of Cadbury Nigeria Plc in 2018; Covid-19 unemployment insurance fraud in 2021; dismissal of all the First Bank Plc directors by the Central Bank of Nigeria on account of involvements in fraudulent activities in 2021 among others have made investors to lose confidence on the financial reports published by companies. This in turn has raised concern on the trust bestows on CEOs‘ in protecting and promoting investors interest, and the credibility and reliability of financial information prosecuted by companies.

Furthermore, thorough investigation into previous studies clearly discloses that managers manage earnings at their discretion through either accrual based or real activities manipulation (Chandren, 2016). Worthy to note is that, most firms in recent time have drifted attention from Accrual-based earnings manipulation (AEM) (Bouaziz, 2020) to Real earnings management (REM), which is more cumbersome to detect. Roychowdhury (2006) had earlier reported that, beyond decrease in Research and Development expenses adopted by managers, there are series of manipulation which may be perpetrated through the real operating and cash-flow activities of an organization.

Jacoby, Li, and Liu (2019) presented three types of incentives which may prompt CEOs to exercise their discretion over reported earnings. The first is capital market incentives, where managers have an incentive to alter their reported earnings to meet analysts‘ forecasts, or to maintain performance by increasing report earnings or reversing a decrease in earnings. Second is regulatory and tax incentives, where CEOs may adjust earnings to avoid the costs associated with governmental regulations. The third type of incentive pertaining to Earnings Management is contractual incentives, where CEOs may manipulate earnings to maximize their own compensation. In view of the above exposition, the current study examined the effect of CEO attributes (CEO expertise and gender diversity) on real earnings management of listed oil and gas companies in Nigeria.

2. REVIEW OF RELATED LITERATURE

2.1 CEO Gender Diversity

One of the major factors which influence earnings management is CEO gender diversity. This construct gained public attention immediately after the global financial crisis in 2008. According to Syamsudin, Setiany and Sajidah, (2018), the presence of women CEOs in the boards of directors are good instrument to enhance the board diversity. Tahir, Ullah, Ahmad, Syed and Qadir, (2021) was of the view that, a diverse board does not necessarily improve a company. By implication, it may not have the tendencies to increase a firm‘s earnings management.

Whereas, Ujunwa, Nwakoby and Ugbam (2017) reported that, higher percentage of women on the board of directors is disproportionately associated with higher firm performance. They explain that the number of women in the top management is relatively low and present only 4.5% and there are no female chief executives. In relation to earnings management, Seyaningrum, Sekarsari, and Damayanti, (2019), women CEOs are less involved in earnings management than male CEOs. This is because women are more careful, avoid risk and have higher ethical standards, consequently they can reduce motivation to carry out earnings management. This however, cannot be said to be true in all cases.

2.2 CEO Financial Expertise

A CEO‘s financial knowledge is essential in assessing the reliability of financial statements. CEOs are likely to learn more about financial and accounting issues from their management skills and expertise in their fields, make reasonable accounting judgments, and enhance the financial reporting structure (Imade, 2019). CEOs with financial expertise are also conscious of the sort of information investors need from the comprehensive financial market knowledge and the value of accounting information for investors (Javad, & Javad 2019). Prior studies have explained how CEO‘s expertise and perceptions can affect organizational decisions.

In reality, the degree and form of work expertise influence the CEO‘s cognitive structure, strategic options, and decision-making models or processes (Magnanelli, Raoli & Tiscini 2017). Managers with excellent skills have more social resources and functional learning capabilities in addition to a robust selection of analytical skills (Marinova, Plantenga & Lery, 2020). Therefore, they may engage in a financial report using their professional judgement or the design of actual transactions to modify accounting information (Martín-Ugedo, Mínguez-Vera, & Palma- Martos. 2017).

2.3 Real Earnings Management

Real earnings management (REM) according to Jaffar and AbdulShukor (2016) refers to management departures from normal operational practices, purposely to deceive shareholders that the financial statement has been met using the normal operational practice. These consist of decrease in discretionary expenses and offering price discount with the aims of beating an earnings threshold. Ipino and Parbonetti (2017) described REM as actions taken by managers to move away from normal business practices to abnormal business practices. Various approaches which are used include abnormal production to reduce cost per unit and raise the sales level by providing favourable credit terms and lessen the budgetary expenses for the purpose of adjusting the earnings figures, and the timing of cash flow.

Recently, studies reported that businesses under different reasons have moved their earning management practice from accrual-based earnings management to real earnings management (ERM), due to some changes in the regulation (e.g., Sarbanes Oxley Act) that limit the use of accrual earnings management, and tighten accounting standards and the adoption of international financial reporting standard (IFRS) (Jaffar & AbdulShukor, 2016). Known ERM proxies as stated by Potharla, Bhattacharjee, and Iyer (2021); Pathak, and Ranajee (2018) are abnormal operating cash flow, over production and reducing discretionary expenditure.

First, abnormal operating cash flows occurs when actual operating cash flows differ from the normal level of operating cash flows, sales manipulation is suspected, which is the main source for managing the operating cash flows. As per previous studies (Roychowdhury, 2006), normal operating cash flows are estimated as linear functions sales and change in sales. All variables used in the abnormal operating cash flow model are scaled by one-year lagged assets. Abnormal operating cash flows are derived as the difference between actual and estimated operating cash flows and multiplying the difference with the negative one (−1). After the multiplication of abnormal operating cash flows with minus one, the positive values of abnormal cash flows represent income-increasing REM (Pathak, & Ranajee, 2018).

Second, the over production model suggests that an increase in production leads to a decrease in the Cost of Goods Sold (COGS) due to the allocation of fixed production overheads to an increased number of units of production. A decrease in COGS leads to an increase in earnings. In this way, over-production, ultimately, results in inflated earnings. Mulchandani, Mulchandani, and Wasan (2019) noted that, the normal level of production cost is estimated as the linear function of sales, change in sales in the current year, and previous year.

Third, the reducing discretionary expenditure model suggests that to estimate the abnormal reduction of discretionary spending, the normal level of discretionary spending is predicted as the linear function of sales and change in sales. The difference between actual discretionary spending and normal discretionary spending is treated as abnormal discretionary spending and it is multiplied by minus one (−1). After the multiplication of abnormal discretionary spending with minus one, the positive values of abnormal discretionary spending represent income increasing earnings management (Dang, Nguyen, & Tran, 2020).

The implication of these models is that REM can be computed by the accumulation of the abnormal cash-flow operating activities (ABN_CFO), abnormal selling, general and administrative expenses (ABN_SG&A), and abnormal production costs (ABN_PROD). To compute ABN_CFO, it is seen as variation between actual and normal abnormal cash flow from operating activities by estimated coefficient from corresponding industry-year model and firm-year sales and lagged asset with similar interpretation for rest of REM metrics.

2.4 Theoretical Framework

This study was hinged on the upper echelon theory. The upper echelons theory is a management theory propounded by Donald, Hambrick, and Phyllis Mason in 1984. This theory states that, organizational outcomes are partially predicted by managerial background characteristics of the top level management team. Accordingly, this theory tries to explain a correlation between the organizational outcome and managerial background characteristics. Furthermore, the Upper echelons theory has raised many debates on the demographic characteristics of the top management team.

The theory‘s core concept is that the organisation is represented by its CEO (Hambrick & Mason, 1984). This theory also believes that CEOs characteristics influence their choices. Furthermore, upper echelons theory discussed that due to their personal characteristics and unique skills, CEOs affect the development of values, strategic decisions, and company reporting decisions (Hambrick & Mason, 1984). Moreover, this theory says that the CEO‘s temperament, experience, and beliefs affect their premeditated decisions by interpreting the circumstances they face (Hambrick, 2007).

The theory further states that the characteristics of CEO can affect the value of the company, the selection of the company's strategy, and the company's financial reporting decisions. This is because CEO's personality and experiences influence policy making on the interpretation of the situation they face (Hambrick, 2007). This theory further states that, the more experienced CEOs would be more inclined to take risks to engage in earnings management than less experienced ones.

3. METHODOLOGY

The study employed *ex-post facto* research design with a population size of 10 listed oil and gas companies in Nigeria as of 31 December, 2022. The 10 listed oil and gas companies were sampled due to the small nature of the population of study. The study obtained data from yearly published reports and accounts of 10 listed oil and gas companies from the period 2013-2022.

Panel data regression was employed to determine the extent to which CEO gender diversity and financial expertise affect real earnings management in Nigeria; hence, the study builds on the empirical models of Bouaziz, Salhi and Jarboui (2020); however, with some modification. On the basis of this, the functional regression models are as follows:

$$REM = f(CEOG, CEOE)$$

$$REM_{it} = \alpha_0 + \beta_1 fCEOG_{it} + \beta_2 CEOE_{it} + \varepsilon_{it}$$

REM = Real earnings management; CEOG = Chief executive officer gender diversity; CEOE = Chief executive officer financial expertise; *i* = Oil and gas firms; *t* = Time period; ε = Error term; α_0 = Constant; β_1-β_2 = Parameters of regression estimates.

Table 1: Measurement of Variables

Variables	Measurement	Source	A-priori
Real earnings management	Abnormal Cash-Flow Operating activities (ABN_CFO) + Abnormal selling, general, and administrative expenses (ABN_SG&A) +Abnormal production costs (ABN_PROD)	Ahmad, Faisal, Riaz, and Rahman (2022)	Nil
CEO Gender Diversity	If the CEO is male is denoted as 1 but if it is female, it is denoted as 0	Na and Hong (2017)	+
CEO Financial Expertise	If the CEO has accounting or finance qualifications or previous experience is denoted 1 otherwise 0.	Baatwah, Salleh and Ahmad (2021).	+

Source: Compiled by the Researcher (2025)

4. RESULTS AND DISCUSSION

Table 2: Descriptive Statistics

Variables	Mean	Median	Maximum Value	Minimum Value	Std. Dev.
REM	0.2260	0.1690	0.7770	0.0000	0.1468
CEOG	0.6600	1.0000	1.0000	0.0000	0.4760
CEOE	0.5900	1.0000	1.0000	0.0000	0.4943

Source: Compiled by the Researcher (2025)

Table 2 shows that oil and gas companies on the aggregate, has a mean of 0.2260 which deviates by 0.1468 for REM; this shows low dispersion because estimates of the standard deviation is less than the mean values for CEOG (0.6600) and CEOE (0.5900). CEOG has an average of 0.66000 but deviated by 0.4760. Also, the minimum and maximum values of 0.0000 and 1.0000; indicates a low dispersion because estimate of the standard deviation is less than mean value. CEOE has an average of 0.5900 but deviates by 0.4943; this indicates a low dispersion because the estimate of the standard deviation is less than mean value.

Table 3: Normality Test

Variables	Jarque-Bera	Probability	Conclusion
REM	82.472	0.0000	Deviates from Normality
CEOG	17.534	0.0001	Deviates from Normality
CEOE	16.741	0.0002	Deviates from Normality

Source: Compiled by the Researcher (2025)

Table 3 revealed that the variables deviate from normality; thus, to correct this, the result of the study was subjected to panel corrected standard error. The standardized residual shows that the residuals of the independent variables were slightly above 5 percent.

Table 4: Pearson Correlation

Variables	REM	CEOG	CEOE
REM	1.0000		
CEOG	0.5537	1.0000	
CEOE	-0.0122	0.1885	1.0000

Source: Compiled by the Researcher (2025)

The Pearson correlation result in Table 4 showed that CEOG has a coefficient of 0.5537, which signify that CEOG has a moderate positive correlation with REM. On the other hand, CEOE has a coefficient of -0.0122; this signals that CEOE exerts a negative weak correlation with REM. On the overall, none of the variables had high correlation, thus it indicates absence of multicollinearity among pairs of the independent variables.

Table 5: VIF Result

Variables	Coefficient	Uncentered	Centered
REM	1.0000		
CEOG	0.0106	1.0000	
CEOE	0.0049	1.0739	1.0000

Source: Compiled by the Researcher (2025)

The result of VIF offers evidence that coefficient of the independent variables were not above 10; thus, indicating that the empirical model does not exhibit signs of multicollinearity, hence the model of the study can be relied upon for amenable policy formulation.

Table 6: Panel Regression Results

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	1.3410	0.2444	5.4859	0.0000
CEOG	-0.6600	0.2832	-2.3301	0.0223
CEOE	-0.1296	0.0590	-2.1940	0.0308
R-squared	0.5631			
Adjusted R-squared	0.5399			
F-statistic	5.5743	Durbin-Watsons tat		1.8884
Prob. (F-statistic)	0.0000			

Source: Compiled by the Researcher (2025)

The F-ratio is 5.5743 with P-value of 0.0000, indicating that the independent variables (CEOG and CEOE) jointly explained REM by 54 percent while the unexplained variation is about 46 percent which could be accounted for by the error term. The Durbin-Watson result has a value 1.8884 indicating that error is uncorrelated hence there is absence of serial correlation in the empirical model of the study.

The analysis result of CEOG and REM showed a coefficient value of -0.6600, and a p-value of 0.9223; this indicates that CEOG significantly negatively affects REM and a percent increase in CEOG will lead to a decrease in REM. On the other hand, the result of CEOE and REM showed a coefficient value of -0.1295, and a p-value of 0.0308; this indicates that CEOE significantly negatively affects REM and a percent increase in CEOE will lead to a decrease in REM.

CEO gender diversity has negative yet significant effects on real earnings management evidence from oil and gas firms in Nigeria. The analysis result showed a coefficient value of -0.660075, and a p-value of 0.0223. The coefficient value of -0.660075 shows that, CEO Gender diversity reduces real earnings management of oil and gas firms in Nigeria by 66.00%. This implies that, the more women become CEO, the lesser the real earnings management (REM). The possible justification is that women naturally are risk averse and less prone to illicit activities compared to their male counterparts. The p–value of 0.0223 shows that the positive effect of CEO Gender on real earnings managements is statistically significant since its p- value of 0.0223 is less than 0.05% level of significant. This means that CEO gender diversity has negative significant impact on REM and the effect is significant. This result is in support of the Chen (2019) Sheikh and Karim (2019) but deviated from the findings of Abdullah (2020).

Furthermore, the fixed effect model reported that, CEO expertise has significant effects on real earnings management evidence from oil and gas firms in Nigeria. The analysis result showed a coefficient value of -0.129661, and a p-value of 0.0308. The coefficient value of -0.129661 shows that CEO expertise makes negative contribution of about 12.96% to REM of oil and gas firms in Nigeria. This implies that a percent increase in CEO expertise will decrease real earnings management by 12.96%. The p–value of 0.0308 shows that CEO Expertise decrease real earnings management practices/tendencies significantly. This result is in support of the Sani, Abubakar, Aliyu, and Sule, (2019) but deviated from the findings of Aygün and İç (2020).

5. CONCLUSION AND RECOMMENDATIONS

In this study, we investigated the extent to which CEO gender diversity and expertise in financial matters influence real earnings management of listed oil and gas companies in Nigeria

from 2013 to 2022. In specific, the study answered questions relating to the influence of CEO gender diversity, and financial expertise on real earnings management. To provide answer to the questions, secondary data were obtained for ten (10) listed Nigerian oil and gas companies. Findings indicated that both CEO gender diversity and financial expertise had significant effect on real earnings management of the listed oil and gas companies in Nigeria. Hence, the study concludes that CEO gender diversity and financial expertise have influence on real earnings management. On the basis of the finding, the study recommends that more females should be appointed as CEO positions as they tend to reduce and avert real earnings management practices to a very large extent. Also, those that have the authority to appoint CEOs should consider people with financial expertise to emerge as CEOs.

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