ORGANISATIONAL COMPLEXITY AND EARNINGS MANAGEMENT OF LISTED MANUFACTURING FIRMS IN NIGERIA: DOES INDUSTRY-SPECIALISED AUDITOR MATTER?

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Abstract

Increasing competition and globalization have led to the diversification of Nigerian manufacturing companies, which increased their level of complexity and managerial scope for using discretion regarding the financial reporting process. This study, therefore, examined the effect of organisational complexity on earnings management of listed manufacturing firms in Nigeria and tested whether industry-specialised auditor plays a significant role in the effect. Data were collected through the secondary source from the published annual reports of a sample of 21 manufacturing firms listed on the Nigerian Stock Exchange (NSE) as at December 2017. The study used the Ordinary Least Square (OLS) regression with robust standard errors as the technique of data analysis. The study found that industry complexity has a significant positive effect on earnings management, whereas geographic complexity negatively affects earnings management. Besides, industry-specialised auditor negatively moderates the effect of industry complexity on earnings management. The study recommended that regulatory authorities such as the Securities and Exchange Commission should encourage industrially diversified firms to be audited by the specialised auditors. This can be achieved through moral suasion.

Keywords: Organisational complexity, earnings management, industry-specialised auditor, manufacturing firms.

Introduction

The surge in earnings management studies was caused partly by the reaction of stakeholders to the financial crises that led to the collapse of prestigious corporations such as Enron, WorldCom and Tyco. Fraud and irregularities in the financial reporting process by directors to mask reported earnings were a

common feature of the companies that were involved in corporate malpractices globally. Emerging economies like Nigeria are characterised by high concentrated ownership, a conflict between controlling and minority shareholders, and weak investor protection (Muttakin, Khan, &Mihret, 2017). Also, diversification has increased organisational complexity and managers' discretionary scope concerning financial reporting. The rise in organisational complexity factors has the tendency to increase managers' incentive to manage earnings to achieve personal gains.

Organisational complexity refers to the diversification of a firm into several business segments, with each contributing significantly to the overall turnover. The complexity comes about as a result of corporate diversification, which could be industrial or geographical. Industrially diversified firms are argued to be associated with higher information asymmetry and increased complexity of operation and management structure (Nam, Tang, Thornton, & Wynne, 2006). Further, the financial reports of these complex firms are more difficult to scrutinize and require a great deal of expertise and resources for investors and analysts (Vassilescu&Millo, 2016). Industrial complexity also causes a reduction in corporate transparency and a decrease in the quality of audited earnings (Francis & Gunn, 2015). Geographically complex firms are, in most cases, larger than companies operating in a single geographical area. They also have less transparency (Duru&Reeb, 2002) and a greater cost of monitoring management's decisions (Denis, Denis & Yost, 2002). As such, these firms require better systematic monitoring (Singh & Davidson, 2003; Ali, Salleh& Hassan, 2008). A counter-argument is the offsetting accrual hypothesis, which predicts that complex firms generate their cash flows from diverse sources. The accruals generated from these cash flows are not directly related, which makes it more difficult for managers of these firms to manage earnings. Therefore, the managers' inability to predict the accruals from the cash flows arising from diverse sources means less incentive to manipulate earnings. However,recent empirical studies do not support that diversified firms have higher information asymmetry (El-Mehdi &Seboui, 2011; Abubakar&Abdullahi, 2018).

Increasing competition and globalization have led to the diversification of Nigerian manufacturing companies, thereby increasing their level of complexity. Corporate diversification comes with a cost to the shareholders. More importantly, diversification increases information asymmetry and the tendency for earnings management. Some companies in the manufacturing sector have witnessed cases of accounting irregularities in the past, which eroded investors' confidence in the financial reporting process (Shehu&Abubakar, 2012). For instance, Cadbury Nigeria PLC had overstated its accounts to the tune of between 85 and 100 million dollars by 2006, which led to a lawsuit in 2007 (Yero, 2012). Earlier, Lever Brothers (now Unilever) Nigeria Plc. was accused of deviating from the norm based on irregularities in its audited accounts (Mahmud, 2015). The greater complexity of the Nigerian manufacturing firms is likely to increase the tendency for earnings misrepresentation. This makes studying the relationship between complexity and earnings management imperative.

There is no consistent evidence about the relationship between organisational complexity and earnings management. A negative effect was reported bysome strands of the literature (Amit, Livnan&Zarowin, 1999; El Mahdi &Seboui, 2011), while a positive effect was found by others (Farooqi,

Harris & Ngo, 2014). Some studies found an insignificant relationship (Bushman, Chen, Engel & Smith, 2004; Jiraporn, Kim &Mathur, 2008; Teclezion and Mercelin 2014). The inconsistency of findings suggests that there are factors that influence the relationship. Since industry-specialised auditors have both resources and technical expertise they tend to mitigate earnings management arising from organisational complexity. Previous studies have failed to address the moderating role of industry-specialised auditor on the effect of organisational complexity on earnings management. The present study seeks to provide an answer to the question: Does industry-specialised auditor mitigate the effect on organisational complexity on earnings management of listed manufacturing firms in Nigeria?

The study analysis covers the period from 2007 to 2017. The period witnessed unprecedented globalization that eased trade across international borders and hence relevant for this study. The paper contributes to the literature in two ways. One, it adds to the sparse literature on the relationship between organisational complexity and earnings management. Two, it provides methodological contribution by being among the few that test the moderating effect of industry-specialised auditor on the relationship between organisational complexity and earnings management.

The remainder of the paper is organized as follows. Conceptual issues, review of empirical literature and theoretical review are discussed in section. Section three details methodological issues necessary in testing the hypotheses. The results of the study are discussed in section four, while section five deals with the conclusion and recommendation.

Literature Review

The section discusses the concepts of earnings management and organisational complexity. It also reviews the empirical literature on the relationship between organisational complexity and earnings management. The theoretical underpinning for the study is also discussed.

Conceptual Review

Earnings Management

Earnings management has been defined in various ways according to research focus and perspectives. Schipper (1989) defines earnings management as disclosure management in the sense of a purposeful intervention in the external financial reporting process to obtain a private gain for shareholders or managers. Thus, earnings management is the deliberate intervention in the financial reporting process to achieve personal goals by firm managers.McNichols (2000) discusses the research designs of the three most commonly applied designs in the earnings management literature: aggregate accruals, specific accruals, and the distribution of earnings. The most popular design among these three is the aggregate accrual model, which explains earnings management from the perspective of the discretionary accruals that can be manipulated by managers.

In a review of earnings quality literature, Dechow, Ge, and Schrand (2010) argued that there is no superior proxy for earnings management. The literature distinguishes provides two measures of quality

of financial reports: accounting-based and market-based. The accounting-based attributes only consider accounting information (e.g., cash flows and accruals), whereas the market-based attributes contain both accounting information and market data (e.g., information summarized in stock returns). The present study views earnings management from the accounting-based measure (accrual).

How to reduce earnings management remains a recurrent topic of discussion among corporate stakeholders due to its effect on stock value and cost of capital. This is because the quality of financial reports is threatened when managers have the incentive to misreport earnings in line with their own personal objectives. Prior studies suggest that organisational complexity leads to greater information asymmetry, which provides additional incentive for earnings management (Francis & Gunn, 2015; Vassilescu&Millo, 2016; Abubakar & Abdullahi, 2018). Despite the interest in organisational complexity, there has been little empirical effort about the role organisational complexity plays in the earnings management and more so, how this role is affected by industry-specialised auditors. This study seeks to address these important points.

Organisational Complexity

Organisational complexity refers to the characteristics of the operations and communication processes within an organisation (Jennings, Seo &Tanlu, 2015). Complexity varies positively with the number of elements that must be simultaneously dealt with as well as the level of activities and subsystems. This is because the cost of the knowledge of information produced determines the internal complexity of the operation of an organisation (Zurub, Ionescu& Bob, 2015). It describes the characteristics of the interaction among the various segments of the firm. As a characteristic feature, it occurs and grows when the interdependence of the elements within the system becomes relevant (Liu, 2012). In such systems, each part has a significance of its own, and removal of a certain element from the system leads toward destruction of the existing systems' behavior.

Generally, two types of complexity are prominently discussed in the literature. One form is industrial diversification, which indicates that a firm is operating in different related or unrelated industries. Another type of complexity is geographical diversification and is referred to as firms with geographic segments. The literature provides that greater complexity leads to opaqueness in firms' activities, thereby reducing corporate transparency (Bushman, Chen, Engel & Smith, 2004; Graham, Harvey & Rajgopal, 2013). It also affects the quality of audited earnings (Francis & Gunn, 2015) and moderates the influence of internal governance mechanisms on earnings management (Cheng, Li &Shevlin, 2014). In the same vein, Lee, Lev and Yeo (2007) observe that the scope for moral hazard increases with organisational complexity, especially in firms with high organisational relatedness, because direct monitoring by principals is difficult.

Organisational complexity is measured using the industry-wise Herfindahl-Hirshman Index. Consistent with Cheng, Li and Shevlin (2014) complexity is defined as an indicator for high complexity, which equals one (zero) for firm-year observations with above (below) the median first principle component of the proportion of segment sales to total sales of the firm.

$$\sum_{industry=1}^{n} \left(\frac{\text{Sales Segment}}{\text{Total Firm Sales}} \right)^2$$

The measure has ranged between 0 and 1. Higher values of these indices imply more industry and segment sales concentration, and therefore, less complexity. Thus the variable is represented by '1' for complex firms and '0' otherwise.

Industry-Specialised Auditor

An Industry-specialised auditor is one that understands financial reporting complexities of firms in an industry (Abubakar, 2014). Because of this status, the auditor is expected to detect financial reporting fraud and mis-statement. It follows, therefore, that a firm audited by such specialist is expected to have detected earnings management arising from discretionary accruals. Some studies have considered financial expertise of the external auditor as a measure of specialization (e.g., Bedard & Biggs, 1991). This measure can be argued to be a misrepresentation of specialization because hardly can any of the reputed auditors be inexperienced in the financial reporting process. An alternative measure is that any auditor that audits one-third of the firms in the industry is regarded as a specialist. The benefits of industry specialised auditor as identified in the literature include mitigation of financial fraud (Carcello& Nagy, 2004), reporting of lower discretionary accruals (Krishnan, 2003; Abubakar, 2014), and greater asymmetric timeliness of earnings. Industry-specialised auditor is measured as the auditor who enjoys at least 15 percent of the audit market share (Butar-Butar&Indarto, 2018). In other words, an audit firm is considered a specialist if it audits up to 15 percent of the firms in the industry.

Empirical Review

Organisational Complexity and Earnings Management

Empirical studies on the association between organisational complexity and earnings management are sparse and have yielded inconsistent results. Amit, Livnan and Zarowin (1999) studied the accounting implication of complexity with a specific focus on inflation-adjusted earnings, earnings response coefficients and choice of accounting methods. One of the findings was that there is a significant relationship between complexity and choice of depreciation, indicating that in complex firms, earnings can be managed through depreciation. The study of El Mahdi and Seboui (2011) examined whether corporate diversification (industrial and geographic complexity) leads to higher or lower in earnings management in a sample of United States' firms. The study found that industrial complexity (diversification) decreases earnings management, whereas geographic diversification increases it.

Bushman, Chen, Engel and Smith (2004) tested the relationship between financial accounting information, organisational complexity and corporate governance systems in the United States' companies listed on the New York Stock Exchange. The study found that organisational complexity does not affect the quality of financial reports and that the demand for corporate governance increases

with complexity. Teclezion and Mercelin (2014) found that earnings management is significantly reduced in firms that pursue corporate diversification and that diversification increases the predictability of return on assets in U.S. banking firms during the period 2001 to 2010. Also, Francis & Gunn (2015) investigated whether auditor industry expertise influences the quality of audited earnings in industries with high complexity. The study found that firms in complex industries have noisier earnings occasioned by less earnings persistence, larger within-year industry variations and larger analysts' forecast errors. Further, Farooqi, Harris and Ngo (2014) examined the interaction among corporate diversification, real earnings management, and firm value. Their analysis indicated that industrial diversification and the combination of industrial and global diversification aggravates earnings management through real activities. Conversely, the study reported that global diversification mitigated real activities manipulation. The results of Jiraporn, Kim and Mathur (2008) demonstrated that complex firms do not suffer more severe informational asymmetry and hence, do not have higher earnings management. However, Alhadab and Nguyen (2018) found that diversified firms have more prevalence of both real and accrual earnings management.

From the review of literature, it is apparent that there is no empirical consensus on the effect of organisational complexity on earnings management. The differences in findings are attributable to the differences in the choice of technique of analysis and proxies of earnings management. The review also reveals that these studies are foreign-based emanating mostly from the United States, which have different regulations and more sophisticated business environment. It is therefore desirable to explore these phenomena using data from emerging economies such as Nigeria. These lead us to two hypotheses:

H01 Industry complexity has no significant effect on earnings management of listed manufacturing firms in Nigeria
H02 Geographic complexity has no significant effect on earnings management of listed manufacturing firms in Nigeria

Industry-Specialised Auditor and Earnings Management

The literature also suggests that industry specialist auditors have more industry-specific knowledge and expertise than non-specialist auditors (Dunn & Mayhew, 2004). Empirical evidence suggests that specialised auditors attempt to protect their reputation capital through increased compliance with generally accepted auditing standards relative to non-specialist auditors (O'Keefe, King & Gaver, 1994). Kanagaretnam, Kim and Lobo (2010) examined the relationship between auditor reputation and earnings management and found that once auditor type and auditor industry specialization are included in the same tests, only auditor industry specialization has a significant impact on constraining benchmark beating behaviour. When auditor type and industry expertise are separated, auditor industry expertise has a significant impact on the valuation of financial reporting quality. In the same vein, Zhou and Elder (2001) found that industry specialist auditors are related to less earnings management in the initial public offering process. Butar-Butar and Indarto (2018) found that firms that operate in complex business environments have higher absolute accruals than firms in non-complex

industries. From these findings, it is expected that industry-specialised auditors reduce earnings management because of their knowledge and experience of the audit peculiarities in the industry.

H03 Industry-specialised auditor has no significant effect on earnings management of listed manufacturing firms in Nigeria

Industry-Specialised Auditor, Organisational Complexity and Earnings Management

The moderating role of industry-specialised auditor on the relationship between organisational complexity and earnings management can be inferred from the literature. Alhadab and Nguyen (2018) note that if firms are different at various levels of complexity, then managers' motivations and abilities to use various techniques to manage earnings may be determined by level of corporate diversification. Thus, the level of complexity (industrial and geographic) are significant incentives for managers to engage in earnings manipulation. The negative relationship between industry-specialised auditor and earnings management is documented in the literature (Kanagaretnam et al., 2010; Abubakar, 2014). However, to the best of our knowledge, few studies have attempted to test the moderating effect of industry-specialised auditor on the relationship between organisational complexity and earnings management. Francis and Gunn (2015) examined the role of auditor industry expertise the relationship between industry accounting complexity and earnings properties. They found smaller accruals in complex firms and that industry-specialised auditor is insignificant in non-complex industries. Also, Bushman et al. (2004) examined the interaction among financial accounting information, organisational complexity and corporate governance systems and found that internal governance mechanisms vary significantly with increases in firm complexity. The finding implies that complex firms require more systematic monitoring to mitigate agency cost (such as earnings management). This study argues that industry-specialised auditors matter most for firms that are complex along geographic and product lines. Therefore, it is expected that earnings management can be detected and possibly by the specialist auditors in complex firms. These lead us to the next hypotheses:

H04: Industry-specialised auditor has no significant moderating effect on the relationship between industrial complexity and earnings management.

H05: Industry-specialised auditor has no significant moderating effect on the relationship between geographic complexity and earnings management.

Theoretical Review

Agency theory propounded by Jensen and Meckling (1976) presents the theoretical underpinning of this study. The most important basis of the theory is that managers are self-interested and that they use their position to pursue their, which may conflict with that of the shareholders. One of the potential areas of agency conflict is financial reporting. Davidson, Good-Stewart and Kent (2005) argue that when managers provide inaccurate financial reporting information, it introduces earnings management as a type of agency cost. The literature argues that the more the information asymmetry, the higher the likelihood of earnings management, which reduces financial reporting quality (Francis &

Gunn, 2015). Organisationally complex firms, by their nature, are more opaque and as such, provides additional incentive for managers to pursue their interest. Industry-specialised auditors are needed more in such organisations to ameliorate the likely reduction in the quality of earnings.

Methodology

The study adopts correlational research design, which is associated with scientific, experimental, quantitative and deductive frameworks where researchers seek specific, quantifiable observations and thus regularly using statistics and experiments to test their hypotheses. The correlational and ex-post factor design is employed to test the hypotheses. This design is relevant because it describes the statistical association between two or more variables.The study population comprises all the 58manufacturing firms listed on the Nigerian Stock Exchange (NSE) as at 31st December 2017. Two criteria are used to determine the sample. Firms whose data are not available throughout the sample period and those that have been delisted from the trading schedule of the NSE during the period are dropped. Based on thesecriteria, a sample size of 21 firms is used for analysis. Secondary data are collected through published annual reports of the sample firms. An unbalanced panel multiple regression is used as a technique for data analysis.

The study employs two-stage regression to disentangle discretionary from non-discretionary components of accruals. In the first stage, a cross-sectional regression of the Kothari, Leone and Wasley (2005) model was run to obtain the discretionary accruals, which is the residual from the Kothari et al. (2005) model. This is consistent with prior studies (such as Ali, Salleh& Hassan, 2008) .In the second stage, the discretionary accruals was used as the dependent variable to proxy earnings management. Following Kothari et al. (2005), Total Accruals (TACC) is defined as the difference between Net Income (NI) which is the earnings before taxation and extraordinary items and cash flow from operating activities (CFO). This means that;

$$\frac{\quad}{\quad} = \quad + \quad \left(\frac{\quad}{\quad}\right) + \quad \frac{\left(\quad - \quad\right)}{\quad} + \quad \frac{\quad}{\quad} + \frac{\quad}{\quad} + \quad$$

Where TACC is total accruals, ∆REV is change in revenue, ∆REC is change in receivables, PPE is property, plant, and equipment and "ε" is the residual. All variables, excluding ROA (Return on Assets), are scaled by laggedtotal assets (TA_{it-1}).

Earnings management is measured as the discretionary accruals, which is obtained from equation (II). The absolute abnormal accruals to proxy earnings management. The larger the value of the discretionary accruals, the higher the earnings management and vice-versa. (Abubakar, 2014). The study considers the absolute value of the accruals because the interest of the researcher is to estimate the extent rather than the direction of the accruals. The signed values are relevant when the objective of a research is to examine income-increasing and income-decreasing earnings management (Abubakar

& Abdullahi, 2018). The following multiple regression model is estimated to test the study hypotheses;

$$EM_{it} = \alpha_0 + \beta_1 IC_{it} + \beta_2 GC_{it} \beta_3 ISA_{it} + \beta_4 IC * ISA_{it} + \beta_5 GC * ISA_{it} + \varepsilon_{it} \quad \text{III}$$

EM = Earnings man agement measured as the residual from the Kothari et al. (2005).
IC = industry complexity measured using the industry-wise Herfindahl-Hirshman Index (HHI). This is consistent with Cheng et al.

GC = Geographic complexity is also measured using the HHI in line with Francis and Gunn (2015). The HHI formula is given as:

$$\sum_{industry=1}^{n} \left(\frac{\text{Sales Segment}}{\text{Total Firm Sales}} \right)^2$$

Where Salessegment is the segment sale of the firm and Total Firm Sales is the total revenue accruing from the firms' total sales for all reported segments of firm i in that year. The HHI value equals 1 for single-segment firms and is less than 1 for multiple-segment firms, thus, the smaller the index, the higher the degree of industrial diversification (Jiraporn et al., 2008).

In both cases (IC and GC), complexity is defined as an indicator for high complexity, which equals one (zero) for firm-year observations with above (below) the median first principle component of the proportion of segment sales (industry/geographic) to total sales of the firm.

ISA = Industry-specialised auditor, which is measured as an indicator (dummy) variable; 1 is assigned when a firm is audited by a specialist during a year and 0 otherwise. A specialised auditor is one that has at least 15% of the audit market share in manufacturing firms (Abubakar, 2014). To determine the market share of an auditor, we counted the number of clients the audit firm has and divide it by the total number of companies. This gives the market share of each of the audit firms.

Results and Discussion

The results of the study are presented and discussed in this section. The results presented are descriptive statistics, correlation matrix, post-estimation tests and regression result.

Table 1: Descriptive Statistics

Variable	EM	IC	GC	ISA
Mean	0.102	0.803	0.800	0.452
Std. Dev.	0.100	0.243	0.248	0.499
Min.	0.001	0.049	0.003	0.000
Max.	0.574	1.000	1.000	1.000

Source: Summary Statistics computed using Stata

The summary statistics from Table 1 shows that earnings management has an average of 0.10, a standard deviation of 0.10, and a minimum of 0.00 and a maximum of 0.58. These indicate that the earnings management for the sample firms are widely differentiated as it combines both high and low quality. This is evident in the high standard deviation of 0.10. Industry complexity (IC) has a mean of 0.80 and a standard deviation of 0.24. The high average indicates that firms that are not highly complex along industrial line make up most of the sample. This is similar to the statistics of geographic complexity (GC) except that GC has a lower minimum value of 0.003, indicating higher complexities along geographic lines. Industry-specialised auditor has a mean of 0.452 and standard deviation of 0.49. The mean of 0.45 shows that the specialist auditor audits a large number of firms in the industry.

Table 2
Correlation Matrix

Variable	EM	IC	GC	ISA	ISA*IC	ISA*GC
EM	1.000					
IC	-0.204	1.000				
GC	0.020	0.778	1.000			
ISA	0.452	-0.173	-0.052	1.000		
ISA*IC	0.439	0.059	0.185	0.838	1.000	
ISA*GC	0342	0.068	0.188	0.751	0.832	1.000

Source: Computed by Author using Stata

Table 2 is the Pearson correlation matrix that shows the relationship among all the variables of the study. The Table reveals that industry complexity has a negative relationship, whereas geographic complexity positively relates to earnings management. Industry-specialised auditor has a positive relationship with earnings management. The interaction of industry-specialised auditor and industry complexity, and industry-specialised auditor and geographic complexity positively relate to earnings management. The high correlations of ISA and ISA*IC and ISA*IC and ISA*GC indicate the need for multicollinearity test because they exceed the threshold of 0.80 suggested by Gujarati (2003).

Diagnostic Tests

The study performs two major diagnostic tests. The multicollinearity test is conducted using the Variance Inflation Factor (VIF). The result indicates VIF values less than 10, indicating the absence of exact correlations among the study independent variables. The Breusch-Pagan/Cook-Weisberg test for constant variance shows that the data is heteroskedastic, and thus, OLS regression may not provide efficient estimates.

Both fixed effect and random effect regressions are run together with the Hausman specification test. The Hausman test reveals a chi2 of 8.59 and probability of 0.13, indicating that the random effect is a more efficient estimate. Also, the Lagrangian Multiplier test shows a probability of 0.14, indicating that there is no panel effect in the data and that the pooled OLS regression is more suitable for analysis.

Table 3
Regression Result

Variable	Coefficient	t. value	Prob.
Constant	0.096	4.52	0.000
IC	-0.175	-2.83	0.005
GC	0.136	2.13	0.035
ISA	0.042	1.94	0.054
ISA*IC	0.076	2.08	0.039
ISA*GC	0.029	-0.90	0.368
R-Square	0.294		
F. Stat.	13.14		
Prob.	0.000		

Source: Computed by Author using Stata

Table 3 is the result of the OLS regression analysis (with robust standard errors). The multiple coefficient of determination (R-squared) indicates that the variables explain about 30% of the variation in earnings management. Probability of F. Statistics (13.14) of 0.000 shows the model is adequate in explaining the interaction among organisational complexity, industry-specialised auditor and earnings management.

In terms of the individual variables, industry complexity has a negative coefficient of -0.174and probability of 0.005. This means that that industry complexity has a significant negative effect on earnings management. This leads to the rejection of the null hypothesis one, which states that industrial complexity has no significant effect on earnings management. The finding is in line with the findings of Amit, Livnan and Zarowin (1999) and El Mahdi and Seboui (2011), while it contradicts the results of Jiraporn, Kim and Mathur (2008) and Teclezion and Mercelin (2014). Theoretically, the finding supports offsetting accrual hypothesis that predicts lower earnings management as a result of industrial diversification, which provides additional motivation for managers to misreport earnings.

With regards to geographic complexity, the result shows a coefficient of 0.136 and probability of 0.035. This shows that geographic complexity has a significant positive effect on earnings management. Based on this, the study rejects that null hypothesis, which states that geographic diversification has no significant effect on financial reporting quality. The result did not support the finding of El-Mahdi and Sebui (2011), whereas it conforms to the result of Farooqi, Harris and Ngo (2014) who documented that international diversification aggravates earnings management. This is in line with the information asymmetry hypothesis, which predicted a positive effect of complexity on earnings management.

Industry-specialised auditor shows a significant positive effect on earnings management with a coefficient of 0.042, a t. value of 1.94 and probability of 0.054. There is evidence to reject the null

hypothesis three, which states that there is no significant effect of industry-specialised auditor on earnings management. The result contradicts the findings of Kanagaretnam, Lim and Lobo (2010) and Zhou and Elder (2011). However, it is also not in line with the argument that specialist auditors tend to mitigate earnings management because of their technical expertise, resources and the desire to protect their reputation.

Concerning the interaction of industry-specialised auditor and industry complexity, the result shows a significant positive influence on earnings management. The result indicates that the specialist auditor has a significant negative moderating effect on the relationship between industry complexity and earnings management. The study, therefore rejects the null hypothesis four, which states that industry-specialised auditor has no significant moderating effect on the relationship between industry complexity and earnings management. This does not support the assertion that complex firms require specialist auditors that will be able to understand the diversification effect on the financial reporting process. For geographic complexity industry specialist auditors do not seem to play a significant role in reducing earnings management. Thus, the study fails to reject the null hypothesis five, which states that industry-specialised auditor has a significant moderating effect on the relationship between geographic complexity and earnings management.

The findings of this study have both theoretical and practical implications. Theoretically, the finding with respect to industry complexity supports the offsetting accrual hypothesis which states that as a result of uncorrelated accruals from diverse geographical segments, managers find it difficult of manage earnings.. It also confirms the information asymmetry hypothesis with regards to geographic complexity that predicts decreased earnings management as a result of organisational complexity. Practically, the study does not support the call for industry-specialised auditor as an external monitoring mechanism that could checkmate managerial excesses in the face of diversification.

Conclusion and Recommendations

This study examines whether industrial complexity plays a role in the relationship between organisational complexity and financial reporting quality. Five hypotheses are tested, and the result indicates that industrial complexity has a significant negative effect, while geographic complexity has significant positive effect on financial reporting quality. Besides, industry-specialised auditor plays a significant positive role on earnings management. More so, an industry-specialised auditor has a significant moderating effect on the relationship between industrial complexity and earnings management. The study does not find a significant moderating role of industry-specialised auditor on geographic complexity and financial reporting quality relationship. Based on these findings, the following recommendations are proffered;

Regulatory authorities such as the Securities' and Exchange Commission (SEC) should keep close monitoring of the financial reporting process of industrially diverse firms through increased disclosure with regards to segment reporting.

The management of Nigerian manufacturing firms should engage industry-specialised auditors to minimize earnings manipulation and ensure the integrity of financial reports.

Industry-specialised auditors should be encouraged by regulatory authorities to audit organisations that are complex along industrial lines to minimise earnings management practices.

The limitation of the study is that it focuses on only the manufacturing firms listed on the NSE, the findings of which may not apply to other industries such as the financial sector and service industries. Also, the study may suffer from potential endogeneity threat, which is common with accounting research literature.

References

Abubakar, A. (2014). Does audit quality influence earnings management in deposit money banks in Nigeria. KASU Journal of Accounting and Practice, 3 (1),181-200.

Abubakar, A. &Abdullahi, A.A. (2018). Moderating role of organisational complexity on the effect of directors' shareholding on earnings management of listed manufacturing firms in Nigeria. BUK Conference Book of Proceeding, 2018, 11-22.

Alhadab, M., Nguyen, T. (2018). Corporate diversification and accrual and real earnings management: a non-linear relationship. Review of Accounting and Finance. https://doi.org/10.1108/ RAF-06-2016-0098, Retrieved on 17th January 2019.

Amit, R., Livnat, J. &Zarowin, P. (1991).Accounting Implications of Corporate Diversification. Management Science; 37 (5), 538-547.

Bushman, R., Chen, Q., Engel, E. & Smith, A. (2004). Financial accounting information, organisational complexity and corporate governance systems. Journal of Accounting and Economics, 37, 167201.

Butar-Butar, S. &Indarto, S. L. (2018). Does auditor industry expertise improve audit quality in complex business environments?Jurnal Akuntansidan Keuangan, 20 (1), 1-12

Carcello, J. &Naggy, A. (2004). Client size, audit specialization and fraudulent financial reporting. Managerial Auditing Journal, 19 (5), 651-668

Cheng, Q., Li, J. &Shevlin, T. (2014). Internal governance and real earnings management. Electronic copy available at: http://ssrn.com/abstract=2162277. Retrieved on 17th January 2019.

Davidson, R., Goodwin-Stewart, J., and Kent, P. (2005). Internal Governance Structures and Earnings Management. Accounting and Finance, 45, 241267.

Dechow, P. M., Ge, W. &Schrand, C.M. (2010). Understanding earnings quality: a review of the proxies, their determinants and their consequences. Journal of Accounting and Economics, 50, 344401.

Denis, J. D., Denis, D.K. & Yost, K. (2002). Global diversification, industrial diversification, and firm value. The Journal of Finance, 57 (5), 1951-1979.

Dunn & Mayhew (2004). Audit firm industry specialization and client disclosure quality. Review of Accounting Studies, 9 (1), 35-58.

Duru, A. &Reeb, D.M. (2002). International diversification and analysts' forecast accuracy and bias. The Accounting Review, 77, 415-433.

El Mahadi, I.K. &Seboui, S. (2011). (2011). Corporate diversification and earnings management. Review of Accounting and Finance, 10 (2), 176 196.

Francis, J. R. & Gunn, J. L. (2015). Industry Accounting Complexity and Earnings Properties: Does Auditor Industry Expertise Matter? Available on line at https://www.uts.edu.au/sites/default/.../AccDG_Francis%20Gunn__WP%202015.Retrieved on 17th January 2019.

Farooqi, J. Harris ONeil& Ngo Thanh (2014). Journal of Multinational Financial Management. 27, 130151

Gordon, L.A., Loeb, M.P. & Tseng, C. (2009). Enterprise risk management and firm performance: A contingency perspective. Journal of Accounting and Public Policy, 28 (4), 301-327.

Graham, J. R., Harvey, C. R. &Rajgopal, S. (2005). The economic implications of corporate financial reporting. Journal of Accounting and Economics 40, 3-73.

Jennings, J., Seo, H. &Tanlu, L. (2015). The effect of organisational complexity on earnings forecasting behaviour. AAA 2013Management Accounting Section Meeting Paper, 1-53 Retrieved from SSRN: http://dx.doi.org/10.2139/ssrn.2130119.Accessed on 21st January 2019

Jiraporn, P., Kim, Y.S. &Mathur, Ike (2008). Does corporate diversification exacerbate or mitigate earnings management? An empirical analysis. International Review of Financial Analysis, 17, 1087-1109.

Kanagaretnam, K., Lim, C.Y., & Iobo, G.J. (2010). Auditing reputation and earnings management: International evidence from the banking industry. Accessed online at http://www.ssrn.com on 25th January 2019.

Krishnan, G. V. (2003). Audit quality and the pricing of discretionary accruals. A Journal of Practice and theory, 22 (1), 109-126.

Lee, K.W., Lev, B. & Yeo, G. (2007). Organisational Structure and Earnings Management. Journal of Accounting, Auditing and Finance. Online at http://www.jaf.sagepub.com. Accessed on 12th December 2018.

Liu, J. (2012). Board monitoring, management contracting and earnings management: an evidence from ASX listed companies. International Journal of Economics and Finance; 4 (12), 121-136.

McNichols, M. F. (2000). Research design issues in earnings management studies. Journal of Accounting and Public Policy, 19 (4-5), 313-345.

O'Keefe, T., King, R. &Gaver, K. (1994). Audit fees, industry specialization and compliance with GAAS reporting standards. Auditing: A Journal of Practice and Theory, 51-55.

Schipper, K. (1989). Commentary on Earnings Management. Accounting Horizons, 91-102.

Teclezion, M. &Mercelin, M. (2014). Diversification, earnings management at U.S. bank holding companies. Accessed online at http://www.ssrn.com on 15th December, 2018

Singh, M., & Davidson, W.N. 2003. Agency cost, ownership structure and corporate governance mechanisms. Journal of Banking & Finance, 27(5), 793-816.

Vassillescu, C. &Millo, U. (2016). Do industrial and geographic diversifications have different effects on earnings management? Evidence from UK mergers and acquisitions. International Review of Financial Analysis, 46, 33-45.

Zhou, J. & Elder, R. (2001). Audit firm size, industry specialization and earnings management by initial public offering firms. Working paper, July.

Zurub, H., Ionescu, A. & Bob, N. (2015). Emerging markets queries in finance and business: Business versus Complexity. Procedia Economics and Finance, 32,360366.

Appendix 1

```
. summarize em ic gc isa icisa gcisa
```

Variable	Obs	Mean	Std. Dev.	Min	Max
em	166	.102267	.1002804	.000478	.574436
ic	166	.797137	.2513715	0	1
gc	166	.8001483	.2479517	.003023	1
isa	166	.4518072	.4991779	0	1
icisa	166	.3729992	.4367116	0	1
gcisa	166	.3544741	.4273735	0	1

```
. correlate em ic gc isa icisa gcisa
(obs=166)
```

	em	ic	gc	isa	icisa	gcisa
em	1.0000					
ic	-0.2039	1.0000				
gc	0.0200	0.7779	1.0000			
isa	0.4523	-0.1729	-0.0523	1.0000		
icisa	0.4390	0.0592	0.1845	0.8376	1.0000	
gcisa	0.3421	0.0678	0.1883	0.7512	0.8317	1.0000

```
. regress em ic gc isa icisa gcisa
```

Source	SS	df	MS
Model	.487789006	5	.097557801
Residual	1.17147654	160	.007321728
Total	1.65926554	165	.010056155

Number of obs	=	166
F(5, 160)	=	13.32
Prob > F	=	0.0000
R-squared	=	0.2940
Adj R-squared	=	0.2719
Root MSE	=	.08557

em	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ic	-.1753035	.0433289	-4.05	0.000	-.2608738	-.0897333
gc	.1356088	.0442993	3.06	0.003	.0481219	.2230956
isa	.0423007	.0276248	1.53	0.128	-.0122555	.0968569
icisa	.0756467	.0353479	2.14	0.034	.005838	.1454555
gcisa	-.028944	.0288549	-1.00	0.317	-.0859296	.0280417
_cons	.0964327	.0270671	3.56	0.000	.0429778	.1498877

```
. vif
```

Variable	VIF	1/VIF
isaic	5.37	0.186214
isa	4.29	0.233358
isagc	3.43	0.291793
gc	2.72	0.367791
ic	2.67	0.374061
Mean VIF	3.69	

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of frq

         chi2(1)      =    19.17
         Prob > chi2  =   0.0000
```

```
. xtreg em ic gc isa icisa gcisa, fe

Fixed-effects (within) regression               Number of obs      =       166
Group variable: id                              Number of groups   =        21

R-sq:  within  = 0.3191                         Obs per group: min =         4
       between = 0.3196                                        avg =       7.9
       overall = 0.2813                                        max =        10

                                                F(5,140)           =     13.12
corr(u_i, Xb)  = -0.4569                        Prob > F           =    0.0000
```

em	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ic	-.1662871	.0452208	-3.68	0.000	-.2556912	-.0768831
gc	.0916101	.0499453	1.83	0.069	-.0071345	.1903547
isa	.0537425	.0296094	1.82	0.072	-.0047968	.1122818
icisa	.1069911	.0373748	2.86	0.005	.0330991	.1808832
gcisa	-.0174449	.0325986	-0.54	0.593	-.0818941	.0470044
_cons	.1035138	.0377632	2.74	0.007	.0288539	.1781737
sigma_u	.04682426					
sigma_e	.08151052					
rho	.24812055	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(20, 140) =     1.82              Prob > F = 0.0241
```

```
. xtreg em ic gc isa icisa gcisa, re

Random-effects GLS regression                   Number of obs      =       166
Group variable: id                              Number of groups   =        21

R-sq:  within  = 0.3105                         Obs per group: min =         4
       between = 0.3499                                        avg =       7.9
       overall = 0.2926                                        max =        10

                                                Wald chi2(5)       =     67.37
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

em	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ic	-.1725515	.0429337	-4.02	0.000	-.2567001	-.0884029
gc	.122965	.0450031	2.73	0.006	.0347606	.2111694
isa	.0435594	.027617	1.58	0.115	-.0105689	.0976878
icisa	.085931	.0353885	2.43	0.015	.0165708	.1552911
gcisa	-.0268754	.0296171	-0.91	0.364	-.0849237	.031173
_cons	.0996893	.0295986	3.37	0.001	.0416771	.1577015
sigma_u	.02535052					
sigma_e	.08151052					
rho	.08819581	(fraction of variance due to u_i)				

```
. xtreg em ic gc isa icisa gcisa, re

Random-effects GLS regression                   Number of obs      =       166
Group variable: id                              Number of groups   =        21

R-sq:  within  = 0.3105                         Obs per group: min =         4
       between = 0.3499                                        avg =       7.9
       overall = 0.2926                                        max =        10

                                                Wald chi2(5)       =     67.37
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

em	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ic	-.1725515	.0429337	-4.02	0.000	-.2567001	-.0884029
gc	.122965	.0450031	2.73	0.006	.0347606	.2111694
isa	.0435594	.027617	1.58	0.115	-.0105689	.0976878
icisa	.085931	.0353885	2.43	0.015	.0165708	.1552911
gcisa	-.0268754	.0296171	-0.91	0.364	-.0849237	.031173
_cons	.0996893	.0295986	3.37	0.001	.0416771	.1577015
sigma_u	.02535052					
sigma_e	.08151052					
rho	.08819581	(fraction of variance due to u_i)				

```
. hausman fe re

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |      fe           re          Difference          S.E.
-------------+----------------------------------------------------------------
          ic |  -.1662871    -.1725515        .0062643        .0141992
          gc |   .0916101      .122965       -.0313549        .0216623
         isa |   .0537425     .0435594        .0101831        .0106777
       isaic |   .1069911      .085931        .0210601        .0120222
       isagc |  -.0174449    -.0268754        .0094305        .0136199
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        8.59
                Prob>chi2 =      0.1267
```

```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        em[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+-----------------------------
                      em |   .0100562       .1002804
                       e |    .006644       .0815105
                       u |   .0006426       .0253505

        Test:   Var(u) = 0
                             chibar2(01) =      1.08
                          Prob > chibar2 =    0.1492
```

```
. regress em ic gc isa icisa gcisa, ro

Linear regression                                      Number of obs =     166
                                                       F(  5,   160) =   13.14
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.2940
                                                       Root MSE      =  .08557
```

em	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
ic	-.1753035	.0619183	-2.83	0.005	-.2975861	-.053021
gc	.1356088	.0637455	2.13	0.035	.0097176	.2614999
isa	.0423007	.0218264	1.94	0.054	-.0008043	.0854057
icisa	.0756467	.0363061	2.08	0.039	.0039458	.1473477
gcisa	-.028944	.0320435	-0.90	0.368	-.0922268	.0343389
_cons	.0964327	.021322	4.52	0.000	.0543239	.1385415