Nexus of Information Asymmetry, Environmental Externalities and Financial Performance: Evidence from Listed Nigerian Companies

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Abstract

Purpose of the article: There is dearth of empirical studies on the association between information asymmetry, environmental externalities and financial performance, especially in Nigeria. Thus in this paper, we examined the nexus of information asymmetry, environmental externalities and financial performance of listed Nigerian firms.

Methodology/methods: In order to attain this, the ex-post facto design was adopted and the simple random sampling technique was used in selecting ten (10) firms in the industrial and consumer goods subsector with data spanning from 2012–2017. The data were obtained from the financial statements of the companiws and the Nigerian Stock Exchange Factbook, while the analysis was carried out via the ordinary least square, fixed and random effects statistical tool.

Scientific aim: This paper assessed the nexus of information asymmetry, environmental externalities and financial performance in Nigeria.

Findings: The study found a clear indication that the level of financial performance of industrial and consumer goods companies in Nigeria is significantly influenced by the information asymmetry, as well as environmental externalities.

Contributions: In view of the findings, it was recommended that there should be collaboration between the government and regulatory framework of accounting in order to advance a robust and clear-cut legislation on disclosure of environmental externalities and information irregularity in the financial statements of companies. Also, this study contributes to knowledge by filling the gap in literature, as well as showing that apart other dynamics that may influence financial performance, information asymmetry and environmental externalities are seemingly fundamental.

Keywords: information asymmetry, environmental externalities, financial performance, Nigeria

JEL Classifications: M40, M41, M49

Introduction

In the corporate environment, financial reporting and disclosure are potentially fundamental avenues through which management convey financial performance and governance to its shareholder. Firms provide disclosure via regulated financial reports together with management reports and other regulatory documents admitted by the regulatory framework of accounting (the International Financial Reporting Standard: IFRS). By and large, firms also engage in voluntary communication in areas of management forecasts, press releases, conference calls and other corporate reports that may be helpful in assessing its financial performance. Given the dynamisms in financial reporting and disclosure by firms, there arise sporadically the information asymmetry and environmental externalities which may tend to impinge financial performance.

The concept of information asymmetry was first initiated in the early 1970s, and this concept connotes numerous and shared phenomena which, according to Oyadonghan, Ogiriki (2014), could not be otherwise elucidated. Information asymmetry arises when one party possess more or superior information than other parties in a firm setting. Simply put, information asymmetry means different people knowing different things. For example, preparers of financial statements know more about financial reporting than shareholders.

Hoje, Kim, Park (2014) argued that the problem of information asymmetry is that it often leads to imperfection in financial reporting, thus resulting to market failure and 'poorly-perceived' financial performance, given the fact that shareholders rely on the imperfect information to make decisions. This asymmetry in information between firms and users of financial statement as observed by Esira *et al.* (2014), repeatedly leads to deprived decision-making and regulatory failure. More worrisome is the fact that

environmental externalities have been found to moderate financial performance (Makori, Jagongo, 2013). Thus, there have been attempts by both institutional and accounting researchers to resolve these duos (information asymmetry and environmental externalities) that create incentives for those with information to disclose it, thus impacting on the financial performance of companies. In addition, given the dearth of empirical evidence on the link between information asymmetry, environmental externalities and financial performance in Nigeria, this paper was carried out with the view to examining the nexus of information asymmetry, environmental externalities and financial performance of listed Nigerian firms in order to suggest measures aimed at reducing environmental externalities and asymmetry of information.

1. Review of Literature

1.1 Information Asymmetry

Information asymmetry as a concept was first initiated in the early 1970s and later popularized by George (2001) using the automobile market as an example in a paper titled "The market for lemons. Quality uncertainty and the market mechanism". The underlying philosophy of the concept is that all parties to a transaction usually have dissimilar volume of information or knowledge about the other party; hence one party may undermine the other, leading to deprived information (Healy, Palepu, 2001).

George (2001) argued that information asymmetry provides one party with a reason to see a transaction of less than the divergence of interests among agents and principals but imposes costs only to the extent that the principal cannot draft perfect contracts (Jensen, Meckling, 1976; Aboody, 2000). This is so because principals cannot draft perfect contracts as a result of asymmetric information with regards to the efforts and actions of agents which they (the principals)

cannot perfectly monitor. This may give rise to incurring of agency costs (Adams, 2004).

There has been limited investigation of the nexus between the nature of firm's financial performance and the degree of asymmetric information; much of the evidence that has been acquired is inconsistent. Healy, Palepu (2001); Brown *et al.* (2004); Stein (2006) found evidence that large shareholders can reduce asymmetric information and hence improve the long-term financial performance. Contrarily *et al.* (2006) and Berthlot *et al.* (2003) found an insignificant link between asymmetric information and financial performance. In view of this, we hypothesized that information asymmetry has no significant link to the financial performance.

1.2 Environmental Externalities

Environmental externalities occupy a central place in assessing the environmental cost of firms. According to Aggarwal (2013), externalities are the loss/gains in the welfare of one party emanating from an activity of another party in the absence of any compensation for the losing party. Thus, externalities arise when specific actions have unintended indirect effects on the other party who may be preparers or users of financial statements (Dibia, Onwuchekwa, 2015). Basically, environmental externalities manifest themselves in two dimensions: positive or negative.

First, the negative environmental externalities arise when an action by individual/group results in harmful effects on others; for instance, pollution is a negative externality affecting the environment and the being therein. Thus, social costs increase when compared to private costs.

Second, positive environmental externalities arise when an action by individual/group bestows benefits to others; for instance technological spill is a positive externality and this occurs in a situation where a firm's invention not only benefits itself but also the society at large in the form of pool of technological knowledge. Thus, when positive

environmental externalities occur, the marginal social benefit increases than the private benefit. Given the fundamental role of environmental externalities in shaping the social costs of corporate entities, we hypothesized that environmental externalities have no significant association with the financial performance.

1.3 Financial Performance

The disclosure of environmental externalities (*e.g.* social costs and benefits) and information asymmetry have the potential to play critical roles in firm's financial performance. Klassen, Mclaughlin (1996) believed that financial performance is miffed by information asymmetry and environmental externalities. Hence, numerous firms are compelled to look for novel and innovative approaches to manage and reduce environmental externalities and information asymmetry so as to maximize performance.

Quite a number of studies have shown that there is a relationship between information asymmetry, environmental externalities and financial performance (Healy, Palepu, 2001; Brown *et al.* 2004; Ball, Shivakumar, 2006; Oyadonghan, Ogiriki, 2014), but there has been a mixed result on the research subject. We believed that the mixed results on the relation between information asymmetry, environmental externalities and financial performance may be associated with country-to-country diversities as regards laws of business operation and a diverse methodology applied by previous studies. Besides, the mixed results may be due to the absence of specific theoretical foundation which constantly surface, thus leading to knowledge convergence. Specifically, this paper assesses if information asymmetry, environmental externalities are associated with financial performance.

1.4 Theoretical and Empirical Background

The theoretical framework of this study is premised on the agency theory (AGT), pro-

pounded by Jensen, Meckling (1976). The AGT emphasises the agency issues arising from the separation of ownership and control. The AGT emphasised the connection between providers of corporate finances and those entrusted to manage the affairs of the firm. According to Jensen, Meckling (1976), the agency relationship exists in terms of 'contract under which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves the delegation and concentration of control on the board of directors (agent)'. Furthermore, the AGT explained the variations in decisions that the two parties often have different goals and thus different attitudes toward risk.

Positivist researchers have tended to focus on identifying circumstances in which the principal and agent are likely to have conflicting goals and then describe the governance mechanisms that limit the agent's self-serving behaviour. This stream has focused almost exclusively on the principal-agent connection existing at the level of the firm between shareholders and managers. For example, Jensen, Meckling (1976), who fall under the positivist stream, propose the agency theory to explain, inter alia, how a public corporation can exist given the assumption that managers are self-seeking individuals and a setting where those managers do not bear the full effects of their actions and decisions.

The AGT also claims that information should be available to all stakeholders at the same magnitude. First, managers should be assured with *ex ante* compensations for future efforts to reduce tax liabilities. Thus, the level of compensation is not tied with the level of managers' actual effort. Second, managers' attempt to reduce a firm's tax liabilities would compromise the integrity of its internal control systems. Thus, managers could create on purpose and take advantage of the opaque internal control function for their own personal gains at the expense of shareholders.

Previous studies have shown that there is a relation between information asymmetry, environmental externalities and financial performance in developed and developing countries, although there have been mixed results. In developing countries such as Nigeria, there are quite a number of studies on the nexus between information asymmetry, environmental externalities and financial performance. Most of the empirical evidence in this area has been obtained in developed countries.

One of those interesting studies in Nigeria that critically examined information asymmetry, environmental externalities and corporate performance is that of Oyandonghan, Ogiriki (2014). The study used questionnaire and the results revealed that information asymmetry has a correlation with the lack of full disclosure and objectivity of financial statements, as well as the lack of value disclosure of negative economic externalities.

2. Methodology

In this paper, the expo-facto design was adopted and secondary data were obtained from annual reports and accounts of selected industrial and consumer goods companies quoted on the Nigerian Stock Exchange (NSE). The study employed the purposive sampling technique by selecting ten (10) industrial and consumer goods firms with data spanning during the period of 2012–2017. Information asymmetry is measured by the audit size (ADSIZE), environmental externalities by environmental costs (ECSF), while financial performance by return on equity (ROE). However, due to the nature of the data (audit size and return on equity), environmental costs were logged so as to avoid scaling issue. The general form of the model is specified as:

$$Y_{it} = \beta_0 + \beta BC_{it} + \mu_{it}, \qquad (1)$$

where:

Y_{it} dependent variable,

β_0 constant,

β coefficient of the explanatory variable,

BC_{it} explanatory variable in the model,

μ_{it} error term (assumed to have zero mean and is independent across time period).

In line with the above equation, we introduced a control variable (firm size) leading to the below model:

$$LogROE_{it} = \alpha_0 + \alpha_1 LogADSIZE_{it} + \\ + \alpha_2 LogECSF_{it} + \alpha_3 LogFSIZE_{it}. \quad (2)$$

The regression model for the empirical analysis is therefore given as follows:

$$ROE = f(ADSIZE, ECSF, FSIZE). \quad (3)$$

A priori expectation of the relationship is that α_1, α_2, α_3, > 0. In other words, the study expects that the parameter (α) of the explanatory variables will have a significant impact on financial performance.

Where:

ROE return on equity (financial performance measure),

$ADSIZE$ audit size (Big-4 audit and non-Big-4 audit),

$ECSF$ environmental cost,

$FSIZE$ firm size (log of total assets),

it represent all the 10 firms in the sample and 10y ears time period respectively,

μ_{it} error term.

The multiple regression, fixed and random effects models were used to investigate the hypothesized nexus between the study variables.

3. Results and Discussions

Table 1 shows the descriptive statistics of the study variables (financial performance: ROE; information asymmetry: ADSIZE; environmental externalities: ECSF; intervening variable: FSIZE). From the table, the mean value of ADSIZE, ECSF, ROE and FSIZE were 0.9555, 11.235, 1.3755 and 1.0605 respectively, while the median 0.1575, 10.5, 1.05 and 1.05 respectively. It is clear from the descriptive statistics that the ADSIZE recorded the maximum (341.849) and minimum (–27.615) values while the ECSF and FSIZE with the lowest values (0) respectively. Besides, the enormous variation of the

Table 1. Descriptive statistics of the study variables.

Statistics	ADSIZE	ECSF	ROE	FSIZE
Mean	0.9555	11.235	1.3755	1.0605
Median	0.1575	10.5	1.05	1.05
Maximum	341.849	21	5.25	5.25
Minimum	–27.615	0	4.2	3.2
Std. Dev.	16.8105	3.612	1.2705	1.05
Skewness	20.9685	0.714	0.84	1.659
Kurtosis	426.29	2.8245	3.423	7.1295
Jarque-Bera	3006247	35.595	48.762	448.928
Probability	0	0	0	0
Observation	60	60	60	60

Source: Authors' compilation via statistical software, 2019.

variables was captured by the maximum and minimum values. This result implies that there are significant variations in all the variables over the period under investigation.

Furthermore, the standard deviations of all the variables were 16.8105, 3.612, 1.2705 and 1.05 respectively for the ADSIZE, ECSF, ROE and FSIZE, suggesting that the variables are not constant over time. Since all the variables are not constant over time, this circumstance permitted the researcher in assessing the nexus of information asymmetry, environmental externalities and financial performance. The skewness of the variables ranged between 20.9685 and 0.714 and are all positively skewed, indicating that majority of the observations fall to the right of normal distribution, suggesting that the average values of the variables (independent) is greater than their median.

Taking into consideration the kurtosis, the ECSF (2.8245) is platykurtic. This means that there is the presence of a thinner tail than the normal distribution. However,

all other variables such as the ADSIZE (426.29), ROE (3.423) and FSIZE (7.1295) are leptokurtic. This suggests the presence of a fatter tail than the normal distribution. The distribution of a series is said to be leptokurtic when the kurtosis is greater than three (3) but platykurtic when the kurtosis is less than three (3). The heteroskedasticity test using the Jarque-Bera statistics is less than 10%, 5% or 1% level of significance, the series are said to be normally distributed and ordinary least square becomes grossly inappropriate. This informed the choice of fixed and random effects regression models.

The correlation result showed that there is the association between each pair of variables. However, the correlation matrix showed that all the variables were positively correlated and none of the correlation coefficients exceeded 0.8. This implies that there is the absence of multi-colinearity among the variables under investigation.

The fixed effect results showed that information asymmetry (ADSIZE) and

Table 2. Correlation matrix results.

VARIABLES	ADSIZE	ECSF	ROE	FSIZE
ADSIZE	1.000			
ECSF	0.621	1.000		
ROE	0.317	0.230	1.0000	
FSIZE	0.449	0.435	0.0061	1.000

Source: Authors' compilation via statistical software, 2019.

Table 3. Fixed effect results.

Variables of the study	Fixed effect outcome
Audit size (ADSIZE)	–0.01649
	(0.51313)
Environmental costs (ECSF)	0.815983***
	(0.21396)
Return on equity (ROE)	1.46489***
	(0.42531)
Firm Size (FSIZE)	–1.20702***
	(0.29929)
R-squared	0.47838

*Standard errors in parentheses ***, ** and * denote 1%, 5% and 10% level of significance respectively*
Source: Authors' compilation via statistical software, 2019.

intervening variable (FSIZE) are negatively correlated to financial performance (ROE) as seen in the variable coefficients of –0.01649 and –1.20702 respectively, while environmental externalities (ECSF) are positively linked to the ROE, as shown by the variable coefficient of 0.815983. However, the ADSIZE and ECSF are statistically significant. By size, the estimates of the coefficients revealed that an increase in the independent variables would respectively lead to 0.51313 and 0.42531 increase in the dependent variable (ROE). This suggests that the independent and intervening variables exert a gargantuan effect on financial performance of quoted industrial and consumer goods companies in Nigeria.

The results of the random effect revealed shows that the ROE is negatively correlated, while the ECSF, ADSIZE and FSIZE are positively correlated to the ROE; this is similar to that of the fixed effect except for the ADSIZE, which has a negative association with the ROE in the fixed effect model earlier reported. Meanwhile, the random

effect model showed that independent variables are statistically significant at 5% and 1% level. Also, the statistical significance suggests that the independent variables are fundamental determinants of financial performance (ROE). Thus, the independent and intervening variables significantly affect the financial performance of quoted industrial and consumer goods companies in Nigeria. These figures appear small but represent a greater influence of the variables on ROE. This is so because the descriptive statistics revealed that the average ROE is 0.9555; thus, the random effect model showed that independent and intervening variables have significant influence on the dependent variable and subsequently greatly affect the extent of financial performance.

The R^2 of fixed and random effect models are 0.7210 and 0.7611 respectively. This implies that the fitness of all the models is good. It suggests that the fixed and random effect models respectively showed that 72.10% and 76.11% changes in the ROE is explained by changes in the ADSIZE, ECSF and FSIZE.

Table 4. Random effect results.

Variables of the study	Random effect outcome
Environmental costs (ECSF)	0.885241***
	(0.19516)
Audit size (ADSIZE))	1.524271***
	(0.34355)
Return on equity (ROE)	–1.0967***
	(0.28001)
Firm size (FSIZE)	0.403767
	(1.33304)
R squared	0.47221

*Standard errors in parentheses ***, ** and * denote 1%, 5% and 10% level of significance respectively*
Source: Authors' Compilation via Statistical Software, 2019.

Table 5. Fitness and joint significance test of the regression models.

Model	Test	Goodness of fit	Joint significance	
		R-squared (R²)	Test statistics	P-value
Fixed effect regression		0.7210	8.79	.0000
Random effect regression		0.7611	77.04	.0000

Source: Authors' compilation via statistical software, 2019.

This means that the significant part of the variation in the ROE is due to changes in the ADSIZE and ECSF. Furthermore, in order to determine the joint significance of the independent variables, the f-test for fixed effect model and Wald test for random effect model was conducted. The null hypothesis in both tests is that the independent variables are not jointly significant.

The result of the test of joint significance showed that f-statistics of the fixed effect model is 8.79 with p-value .0000; correspondingly, the Wald test statistics of the random effect model is 77.04 with p-value .0000. This is a clear indication of the rejection of the null hypothesis and acceptance of joint significance of the independent variables in the models. Consequently, the independent variables jointly have a significant effect on the dependent variable. The implication is that the models passed the joint significant test showing that the independent variables are not only individually significant but also relevant jointly.

4. Conclusion

In this paper, the nexus of information asymmetry, environmental externalities and financial performance was investigated. Based on the analysis, it was concluded that there is a significant nexus among information asymmetry, environmental externalities and financial performance of quoted industrial and consumer gods companies in Nigeria. Thus, owing to the significant nexus of the study result, the role played by information asymmetry and environmental externalities as it affects financial performance cannot be over-emphasised.

In view of the findings, it was recommended that there should be collaboration between the government and regulatory framework of accounting in order to advance a robust and clear-cut legislation on disclosure of environmental externalities and information irregularity in the financial statements of companies. Also, this study contributes to knowledge by filling the gap in literature, as well as showing that apart other dynamics that may influence financial performance, information asymmetry and environmental externalities are seemingly fundamental.

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