

# Value relevance of sustainability reporting in the oil and gas sector in Nigeria

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## ABSTRACT

Does non-financial information have any financial value? There is a debate on whether reporting non-financial information such as reporting the social and environmental impact of the activities of a corporation is relevant information for decision by users of the information, which can affect the value of the corporation. Using the Ohlson (1995) model which was modified, the study used share price as a measure of the value of the oil and gas firms studied, and a strict bias for only GRI social and environmental disclosures, as explanatory variables. Applying regression analysis, the study found that social information disclosure is relevant for making decisions that can lead to positive and significant change in share price. Environmental disclosures on the other hand were found not to have any value relevance. The study advocated for full compliance to the GRI social disclosures by the oil and gas firms for optimum firm value, which should also lead to increased societal and communal acceptance through the corporate social responsibility efforts. In addition, the study recommends that oil and gas firms, because of the nature of their activities on the environment, should be mandated by relevant regulatory authority to disclose their environmental performance using the GRI parameters.



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## 1. INTRODUCTION

Value relevant accounting information is increasingly shifting from information reported within the framework of conventional-mainstream accounting and reporting. The conventional accounting school is based on the provision of economic and financial information, which centers on profitability of an enterprise and upon which investors make predictions and take decisions. Business information is moving from mere providing statistical figures to availing stakeholders the information on business impact in the social and environmental dimensions of business operations; which is now becoming the new “financial” information (KPMG International Cooperative, 2017). Sustainability reporting stands on a tripod of providing information on the social, environmental and economic impact of a business. Any information that positively affect the value of firms in terms of its market price of stock or other value parameters is said to be value relevant and is very important to investors and other stakeholders. The relevance of sustainability reporting to investors for decision making is a subject of interest in the discourse of sustainability accounting. Specifically, the question of whether sustainability accounting information is value relevant is more and more attracting wide attention of scholars. Based on the classical economic theory of wealth maximization, the primary concern of shareholders is to increase their wealth through increase in earnings; therefore information about earnings becomes value relevant. Hence, any investment in the social and environmental impact of the business on society is deemed as a wasted effort not having a direct bearing on earnings. However, studies have emerged to show that financial indices alone are not the only factors that determine the value of firms; and that non-financial information represented in sustainability reporting are also proven determinants of firm value (Canevale, Mazzuca, & Venturini, 2012; Scholtens, Cerin, & Hassel, 2008).

Furthermore, recent empirical researches have shown that information on the social and environmental impacts of business operations have positive effect on financial performance of corporations (Ekundayo, Echobu, & Ujah, 2020; Zhou & Ki, 2017; Akano, Jamiu, Yaya, & Oluwalogbon, 2013; Bolanle, Olanrewaju, & Muyideen, 2012; Uadiale & Fagbemi, 2011). This goes to say that if financial performance, which is of tremendous interest to investors, is positively influenced by the social and environmental activities of a business, then information on the social and environmental impact of a business is also value relevant. This line of thought has also been

empirically proven by researchers who submit that sustainability reporting provides value relevant information for the benefit of investors and other stakeholders (Zraqat, 2019; Aureli, Gigli, Medei, & Supino, 2019; Emeka-Nwokeji & Osisioma, 2019; Miralles-Quiros, Miralles-Quiros, & Arriaiano, 2018). Sustainability reporting is still largely within the purview of voluntary reporting (Michelon, Pilonato, & Ricceri, 2015), and most corporations, especially in the developing economies report their social and environmental impact using their different formats (Emeka-Nwokeji & Osisioma, 2019; Scholtens, 2009). This different reporting format is a problem for comparability of reports among firms. Apart from using their individual formats, lack of the application of a uniform standard for recognition and measurements of these non-financial variables further complicates the problem. This means that results of studies carried out on this premise may be faulty and suffer from bias. This study therefore applies the standard guidelines of the Global Reporting Initiative (GRI) in the recognition and measurement of social and environment activities of firms. The GRI is considered and accepted as the most widely used standard for sustainability reporting worldwide (Miralles-Quiros, et al, 2018). The application of the GRI framework in the developing Nigerian economy is a high point of this work; and finding out whether the GRI based sustainability disclosures have any significant effect on value of oil and gas firms in Nigeria, a sector which is considered relevant for this study because of the impact of their activities on the environment.

This research paper is organized into five sections. The first section provided a background and introduced the main components of the subject matter. The second section reviews relevant literature and develops hypothesis for the study; while the third section reports the methodology adopted for the study. Sections four and five presents and discusses results of the study and provides recommendation there from, respectively.

## 2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### 2.1 Conceptual Review

When stock price responds to accounting information, that reported information is said to have value and is relevant for decision making by investors. Accounting information is deemed to be value relevant if it has a relationship with equity market value and, if it increases the power of the estimating equation in estimating market values (Barth, Beaver, & Landsman, 2001). Value relevant

information allows investors to measure the value of a company well so that they can both make rational decisions and predict future returns of securities (Narullia, Subekti, Azizah, & Purnamasari, 2019); have significant relationship with stock prices (Scott, 2015); is a statistical measure of information presented in the financial statement and stock market value or return (Akani & Briggs, 2018). The concept of sustainability reporting is described as satisfying both the direct and indirect information needs of stakeholders of a company without denying the needs of future stakeholders (Dyllick & Hockerts, 2002). It is viewed as a process of focusing on company achievements in all five dimensions of sustainable performance-economic, social, managerial, ethical, and environmental (Rezaee, 2016). These definitions underscore corporate performance and reporting beyond the conventional economic scorecard to include non-financial indices; because many drivers of value are omitted in the traditional financially inclined corporate reports (Emeka-Nwokeji & Osisioma, 2019). Sustainability reporting provides a platform for users of information to have a holistic view of corporate performance and long-term value creation (Dilling & Caykoylu, 2019); is the new reporting that not only combines both financial and non-financial information but also emphasizes on reporting information on long-term value creation of firms (Dilling & Harris, 2018; Villiers, Hsiao, & Maroun, 2017); is considered as a better quality information which reveals the link between social, environmental and economic dimension of organizations (Villiers & Maroun, 2017); and measures and discloses non-financial performance of firms in relation to sustainable development goals (Emeka-Nwokeji & Osisioma, 2019).

## 2.2 Empirical Review and Hypotheses Development

Some corporations rather than struggle to fully accept and practice sustainability reporting have not only been engaged in sustainability development but are striving to be recognized as leaders in the practice of sustainability reporting. Six hundred (600) of this type of firms listed in the Dow Jones global total stock market index, and are considered as leaders in sustainability reporting were the focus of the study carried out by Lourenco, Callen, Branco and Curto (2014). Specifically, the study compared firms with good reputation for providing leadership in sustainability reporting with others that do not enjoy such reputation. As expected, the result of their study showed that these firms with good reputation for sustainability reporting have a higher market valuation compared to their counterparts in the other divide. In the context of developed economies, Miralles-Quiros, et al (2018) studied European banks to attest the value relevance of their sustainability reports. This was done in addition to finding out whether investors value these reports during and after financial crises. The Ohlson valuation model was employed and the result revealed that the market is positively and significantly influenced by information on sustainability in both during and after financial crises. The study applied the guidelines of the GRI which is expected because the developed economies have a higher rate of compliance with the GRI framework (KPMG International Cooperative, 2017).

A study of ASEAN public companies by Narullia, et al (2019) examined how the economic variables of earnings, book value of equity and operating cashflow affects share price of the companies; and also considered whether various components of Corporate Social Responsibility (CSR) activities using GRI index could cause a response from earnings, book value of equity and cashflow from operations in the firms studied. The study found that all economic variables were able to elicit response from share price, signifying that they are value relevant. On the other hand, only operating cashflow responded to reported CSR information. CSR information failed to have any positive and significant influence on both earnings and book value of equity, the reason being attributed to poor quality of the CSR reports.

An emerging economy study was conducted in Nigeria by Emeka-Nwokeji and Osisioma (2019). They relied on the content analysis of sustainability reports provided by the non-financial sector firms they studied; and specifically examined whether environmental, social and governance disclosures are determinants of firm value, which they measured using the Tobin's Q. Results of the study revealed that both environmental and governance disclosures were able to explain variation in firm value, but the relationship between social disclosure and firm value was negative and insignificant. The study of Zraqat (2019) gives a clear demonstration of the positive impact of non-financial information on corporate value. The study used two different measures of firm value, namely share price and

market returns, which gave rise to two study models one for each measure as dependent variable. For each model, regression was run twice, the first without the inclusion of sustainability disclosures as independent variable and the second with sustainability disclosure as an independent variable. This was done to find out whether there will be significant difference in both regressions in terms of an improvement in the explanatory power of firm value. Empirical results of the study showed that adding sustainability disclosures in the stock price model increased the explanatory power of the model from 21% to 30.8%. On the other hand, the explanatory model with market return as dependent variable rose to 30.6% from 15.8% when the non-financial variables were added. This study further buttress that non-financial factors are to be considered in determining firm value.

Khaghaany, Kbelah and Almagtome (2019) also used two measures of share price and traded shares to represent firm value in their study of value relevance of sustainability reporting in the tourism sector of Iraq. The independent variables were the three components of sustainability: economic, environmental and social, and a metric was created to classify each of these components based on the GRI guidelines. The overall result of the study showed that sustainability reporting accounted for 54% of the changes in share price and did not however produce a significant effect on traded shares of the Iraqi tourism firms for the period studied. A comparative study of companies in Indonesia and Singapore was carried out by Narullia and Subroto (2018) for a three-year period from 2013-2015. Share price was considered as proxy for firm value, while the explanatory variables include cashflow from operations, earnings, book value of equity and CSR representing sustainability information. Comparatively, the overall result revealed that for both countries CSR was not a predictor of firm value. However, accounting earnings was value relevant information in both nations while operating cashflow and book value of equity were considered relevant in Singapore but not in Indonesia. Sutopo, Kot, Adiati, and Ardila (2018) applied a rather unique dichotomous measure of sustainability reporting based on a rewarding system of giving sustainability reporting awards to deserving companies in Indonesia on their performance in sustainability activities. Scores of one and zero were given for companies with the award and without the sustainability reporting award respectively. The models of the study used share price and stock returns as measurement yardstick for firm value, and included earnings per share, book value of equity and earnings per share change in the model as explanatory variables. The study found that these explanatory variables are value relevant information. Comparing the awardee firms with the non-awardees firms revealed that as earnings per share increases, both share price and stock returns increase also in the awardee companies; and the increase in stock returns is higher in the awardee firms than in the firms without the award. However, the study found that value relevance of book value per share for awardees firms is lower than for non-awardees firms. The study concluded that information about winners of the sustainability reporting award has an impact on the value relevance of financial statements, especially information about earnings per share.

Another recent study done in Nigeria by Okpala and Iredele (2018) examined the effect of corporate social and environmental disclosure on the market value of eighty-four listed firms. Tobin's Q measure of firm value was adopted while content analysis of social and environmental disclosures quantified these non-financial factors. Findings from the study showed that corporate social and environmental disclosures had a negative and significant effect on market value. This implies an inverse relationship, meaning that an increase in these non-financial disclosures will lead to a decrease in firm market value. This result is a deviation from most studies in Nigeria, which the authors adduced to negligible number of ethical investors in Nigeria who regard environmental and social activities important. Gitahi, Nasieku, and Memba (2018) investigated the relationship between corporate social responsibility disclosure and value relevance of listed banks in Kenya. The study used a blend of both primary and secondary data sources in the form of financial analysts' perception and content analysis to quantify CSR disclosures. Value relevance was measured using average market price per share. It was observed from the results of the study that there is significant explanatory power of CSR disclosure on value relevance of annual reports of the banks. This led to the conclusion that that inclusion of corporate social responsibility disclosure by a firm in its annual reports improves the perception of investors and impacts on the value

relevance of annual reports. Drawing from the findings and conclusions of most of the reviewed studies, this study formulates the following hypotheses (in alternate form) for subsequent testing and validation. These hypotheses are based on the non-financial components of social and environmental performance of sustainability reporting.

**H<sub>1a</sub>:** Social information disclosure increases share price of listed oil and gas firms in Nigeria

**H<sub>1b</sub>:** Environmental information disclosure increases share price of listed oil and gas firms in Nigeria

### 3. METHODOLOGY AND MODEL SPECIFICATION

In a bid to investigate whether sustainability reporting is relevant for measuring corporate value in listed oil and gas firms in Nigeria, this study adopted the valuation model of (Ohlson, 1995) which states that for a listed firm, market value is determined by its annual earnings, book value of equity and any other information that increases the value of the firm. In line with this model, share price is taken to represent value of a firm, and is considered as the dependent variable of the study. Since other information different from financial information can also positively affect value, the Ohlson model is modified to include non-financial information, represented as social and environmental components of sustainability reports. These non-financial information of the firms investigated were recognized and measured using the GRI (G4) guidelines which are widely used in CSR studies and are considered to enhance the reliability of narrative reporting such as the social and environmental sustainability disclosures. The *ex post facto* research design was adopted to study the listed oil and gas firms in the period from 2010-2019 (See Table 1 for the listed oil and gas firms examined in the study). Data for the study were secondary in nature, and were generated from the annual reports of the firms. The data were analyzed using pooled ordinary least regression using STATA software, consisting of a combination of time series and cross-sectional data in a single regression, allowing control of individual firm effect (heterogeneity) and the endogenous nature of the independent variables. Therefore, all firms in the study were included in a single regression model, thus:

SHPR is share price, SOCD is social disclosures and ENVD stands for environmental disclosures.  $\square\square$  and  $\square\square$  represent intercept estimates and error term respectively, while  $\square\square\square$  are the coefficients of the independent variables. The subscript  $i$  indicates the firm-year times series and cross-sectional nature of the data.

**Table 1.** Listed Oil and Gas Firms

S/N	Name of firm
1	11 Plc
2	Ardova Plc
3	Conoil
4	Eterna Plc
5	Japaul Oil and Maritime Services Plc
6	MRS Oil Nigeria Plc
7	Oando Plc
8	Total Nigeria Plc

**Table 2.** Variable Measurements

S/N	Variable Name	Measurements	Source
1	Share price (SHPR)	Annual stock price	Sutopo, et al (2018)
2	Social disclosures (SOCD)	Index score generated from the score of 1 or 0 for disclosures or otherwise on community, donation, employee, health and safety and customer/complaints.	GRI (G4)
3	Environmental disclosures (ENVD)	Index score generated from the score of 1 or 0 for disclosures or otherwise on material, energy, water, biodiversity, emission/greenhouse gas, waste management, product services and compliance to laws.	GRI (G4)

### 4. PRESENTATION AND ANALYSIS OF DATA

The data for the study are presented in tables below and analyzed to give meanings to what the figures depicts.

#### 4.1 Description of Data

This subsection gives general features of the data of the oil and gas firms studied. It shows and analyses data on descriptive statistics, correlation between share price and sustainability disclosures and the relationship between data on the sustainability disclosures.

**Table 3.** Descriptive Statistics

Variables	No. of Observations	Mean	Standard Deviation	Minimum	Maximum
SHPR	80	66.9084	78.7869	0.2	300
ENVD	80	0.0156	0.0416	0	0.125
SOCD	78	0.6872	0.1723	0.2	1

Source: Results from STATA Output

Table 3 shows that between 2010 and 2019, the maximum amount of share price for the oil and gas firms studied in Nigeria was 300 naira only, as against the least share price of 20 kobo for the same period. It also shows that there is no wide disparity between the mean share price of 66.90 and standard deviation of 78.78. The data for environmental disclosures shows a mean disclosure of 0.0156 suggesting that only 1% of the environmental disclosure requirements as specified by the GRI (G4) are being disclosed and reported by the oil and gas firms in Nigeria. This goes to show that oil and gas firms in Nigeria barely report the impacts of their activities on the environment. This position is further corroborated by the minimum and maximum environmental disclosure values of 0 and 0.125 respectively. Furthermore, the table shows that oil and gas firms in Nigeria comply with reporting the social impact of their activities to the tune of about 68% (0.6872). It also holds that with a minimum disclosure value of 0.2, each of the firm engage in at least one form of corporate social responsibility for the improvement of the social wellbeing of host communities.

**Table 4.** Correlation between Share Price and Sustainability Disclosures

Variables	SHPR	ENVD	SOCD
SHPR	1		
ENVD	-	1	
	0.3023		
SOCD	0.0560	0.2079	1

Source: Results from STATA Output

Table 4 shows both the magnitude and the direction of the relationship between share price and environmental and social disclosures individually. The table shows that that there is a weak relationship between social disclosures and share price. However, this relationship is positive, indicating that more social disclosures will lead to a corresponding increase in share price and vice versa. On the other hand, environmental disclosure is moderately and inversely related with share price as indicated in the coefficient of -0.3023 (30%). This means that an increase in environmental disclosure will cause share price to decrease.

**Table 5.** Summary of Regression Results

Variables	Coefficient	Z-Value	P-Value
Constant	27.5142	0.74	0.457
ENVD	-636.33	-0.94	0.345
SOCD	72.1897	2.22	0.026
Wald chi2 (2)	5.66		0.05
R <sup>2</sup> overall	0.1112		
Heteroscedasticity			0.0028
Hausman test	0.02		0.8772
Lagrangian Multiplier Test	164.72		0.0000

Source: Results from STATA Output

Table 5 shows results for heteroscedasticity test, hausman specification test, Lagrangian multiplier test for random effects and the random effects model which is adopted for this study. The p-value of 0.0028 for the heteroscedasticity test did not meet the constant variance requirement, an indication that the ordinary least square regression model is not fit for this study. Hence, further tests of fixed effects (GLS) regression and random effects (GLS) regression were carried out; and the hausman test run to determine which of the GLS models is suitable for the study. The hausman test shows a chi2 value of 0.02 and a p-value of 0.8772, suggesting that the random effects model is fit for this study. This was further substantiated by the 164.72 chi2 value and 0.0000 p-value of the Lagrangian multiplier test for random effects.

From the random effects regression model, the z-value and p-value for social disclosure is 2.22 and 0.026 respectively, indicating that the relationship between social disclosures and share price in the oil and gas firms in Nigeria is positive and significant at 5%. This means that social information is relevant for decisions that can have direct impact on the value of oil and gas firms in Nigeria. Furthermore, the regression results reveal a z-value of -0.94 and p-value of 0.345 respectively for environmental disclosures. This means that there is no significant impact of environmental disclosures on share price of listed oil and gas firms in Nigeria. Environmental disclosures are not relevant for decisions that can affect firm value of firms in the oil and gas sector in Nigeria. The Wald chi2 value of 5.66 and the corresponding p-value of 0.05 show the fitness of the model.



Social and environmental disclosures as used in this study explains changes in value of oil and gas firms in Nigeria to the tune of 11% as revealed in the  $R^2$  overall value of 0.1112.

#### 4.2 Test of Hypotheses

The test of hypotheses is based on the results of the random effects model as shown in table 5. The first hypothesis of the study is stated thus:

**H<sub>1a</sub>:** Social information disclosure increases share price of listed firms in Nigeria.

The result shows z-value of 2.22 and p-value of 0.026 for social disclosure, indicating that the social disclosures and share price in the oil and gas firms in Nigeria move in the same positive direction and this relationship is significant at 5%. This means that as social information disclosure increases, there will be a corresponding increase in the value of oil and gas firms in Nigeria. The study therefore accepts the hypothesis that social information disclosure increases share price of listed oil and gas firms in Nigeria. This study outcome agrees with the study of Khaghaany, et al (2019) but does not align with the studies of Okpala and Iredele (2018) and Emeka-Nwokeji and Ososioma (2019). This result is a pointer to the commitment of the oil and gas firms to social accountability, by accepting responsibility for and communicating their activities which have direct impact on the society where they operate. On the other hand, the second and final hypothesis of the study is stated thus:

**H<sub>1b</sub>:** Environmental information disclosure increases share price of listed oil and gas firms in Nigeria.

Results of the random effects model for environmental disclosures are quite different from the social disclosures outcome. This because with z-value of -0.94 and p-value of 0.345, the result shows that there is an inverse, but insignificant effect of environmental disclosure on the value of oil and gas firms in Nigeria, signifying that an increase in the former will necessitate a decrease in the latter. This provides evidence to reject the second hypothesis of the study. This position agrees with the study of Okpala and Iredele (2018) but is contrary to the conclusions of the studies of Narullia, et al (2019) and Emeka-Nwokeji and Ososioma (2019). The nature of the activities of oil and gas firms affect their immediate environment. Therefore, the poor environmental disclosure performance of these firms is quite revealing. This may be because of the voluntary nature of reporting, as social and environmental reporting has not been made mandatory in Nigeria yet. It also reveals that these oil and gas firms have largely failed to comply with the GRI 4 environmental disclosure parameters as used for this study, because they may have their own way of assessing environmental performance which is different from the provisions of the GRI 4.

#### 5. CONCLUSIONS AND RECOMMENDATIONS

This study set out to evaluate the value relevance of both social and environmental disclosures in the oil and gas sector in Nigeria. Whether or not information on social and environmental disclosures are able to cause decisions that will affect the share price of oil and gas firms was tested using regression tools. The study concludes that disclosing the social impact of the activities of oil and gas firms in Nigeria is relevant information that has significant and positive impact on the value of these firms. On the other hand, the study concludes that environmental disclosures are not relevant information that can elicit decision that would affect the value of oil and gas firms in Nigeria. The study recommends that oil and gas firms, because of the nature of their activities on the environment, should be mandated by relevant regulatory authority to disclose their environmental performance using the GRI 4 parameters. In addition, the study recommends full compliance by the oil and gas firms to disclosing and reporting the entire social considerations as spelt out by the Global Reporting Initiative. Presently, only about 68% of these social disclosure requirements are reported by the firms. A 100% observance should present a win-win situation as the host communities where these firms operate will benefit from the corporate social responsibility of the firms; and the firms on the other hand will benefit from increased share price will also increase their value.

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