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DETERMINANTS OF ENVIRONMENTAL DISCLOSURES IN THE NIGERIA OIL AND GAS SECTOR

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ABSTRACT

The study examined the determinants of environmental disclosures in the Nigeria oil and gas sector. Secondary data was retrieved from the corporate annual reports of the sampled companies. Descriptive statistics, ordinary lease square analysis, endogeneity test, fixed and random effect estimation, Hausman tests were all carried out. Regression tests such as normality, multi-collinearity, Heteroskedasticity and serial correlation tests were also carried out. The study revealed that profitability improves environmental disclosure. Meanwhile, leverage reduces environmental disclosure significantly. However, company size does not affect environmental disclosure significantly. The study concludes profitability and leverage are major drivers of environmental disclosure significantly. Hence, firms are advised to pay more attention to environmental reporting, firms irrespective of their leverage level should improve their environmental performance; both small and big firms should improve their environmental performance.

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1. INTRODUCTION

The environment is a vital concern in today's ecological, social and economic set up and environmental accounting/disclosure has emerged extensively in response to these issues, such as gas flaring, greenhouse warming effects, water pollution and other negative environmental impacts. Corporate activities are increasingly becoming a key threat to the environment and this has gotten to a point where a lot of attention is now been directed to the roles of corporations and the initiatives to tackle the growing environmental challenges. In recent past, the concern for the environment has evolved gradually and it is now a mainstream issue. Some scholars have opined that the environmental threat is being faced globally is coming as an opportunity cost to economic growth (Burgwal & Vieira, 2021). There have

been various initiatives and frameworks to address environmental challenges at a global level, the accounting profession on one end of the spectrum has evolved as a disclosing approach that can make companies responsible for the environment in which they operate in (Adler & Milne, 1997). Consequently, an aspect of accounting referred to as environmental accounting and disclosure has now emerges in order to capture the link between corporate entities and the environment. The aim of social disclosure is to communicate to stakeholders what is being done to the environment. This can determine a firm's relationship with stakeholders. With the threat of investors moving from fossil to green investments, environmental disclosure helps to attract foreign investments (Nikoleava & Bicho, 2018). All these have the advantage of assisting firms in defining their responsibilities to the community and assist management in doing proper environmental impact assessment. Not-withstanding, environmental disclosure faces major challenges like the lack of internationally acceptable or recognized reporting standard and guidelines. This coupled with the shortage of environmental experts and professionals makes it very expensive to report on environmental issues (Nikoleava & Bicho, 2018).

Following a global trend, corporations are now paying attention to environmental disclosures (Hackston& Milne, 2018). However, one key issue is that environmental disclose is a rather voluntary activity and it implies that companies are not compulsorily required to make environmental disclosures. This has created a scenario where environmental disclosure practices have evolved in a very much unstandardized context though several global institutions such as the Global Reporting Institute (GRI) amongst others which are not necessarily accounting standard setters have tried to provide leads as to what companies should report. As earlier noted, these suggestions are not binding companies may decide to follow or not these standards depending on their motives. Therefore, firms exert control over the quality and quantity of the environmental disclosures they engage in. Investigating the factors that drive environmental reporting of firms has been a huge area of interest for accounting researchers given that such actions are voluntary particularly in developing countries though this is not the case for developed market due to the strong institutional frameworks that ensure that even though accounting standards in this area are not lucid and adequate, institutional pressures are sufficient to ensure compliance (Adam, 2020). Consequently, looking at firms attributes have been one of the perspectives to investigating the factors affecting environmental disclosures. The reason is that firm's actions are driven fundamentally for their benefit and because again significant variations exist for firms attributes such as firm size, profitability & leverage, there are bound to be variations in the

manner in which they will respond to the need for environmental disclosures (Ahmed & Nicholls, 2018).

1.1 Objectives

The focus of the study is to investigate the factors affecting environmental disclosure in Nigeria oil and gas companies. The specific objectives are to;

1. examine the effect of firm size on environmental disclosure.
2. determine the effect of firm leverage on environmental disclosure.
3. ascertain the effect of financial performance on environmental disclosure.

1.2 Hypotheses

In line with the three (3) specific objectives, the following research hypotheses were formulated in their null forms:

H_{01}: Firm size has no significant effect on environmental disclosure

H_{02}: Firm leverage has no significant effect on environmental disclosure

H_{03}: Financial performance has no significant effect on environmental disclosure

2. LITERATURE REVIEW

2.1 Conceptual Review

Environmental disclosure is an innovative sustainability initiative that has been defined by Patten and Trumpeter (2018) as that aspect of accounting which makes use of environmental accounting systems to capture the environmental impacts of firm's activities. It is an accounting system that supports financial accounting and managerial accounting.

In the views of Howes (2019) environmental disclosure is defined as the process of providing and analyzing information that is related to the environment and the goal in this case is to monetized environmentally related information to improve corporate environmental and financial performance. In context of this paper, environmental accounting is outlined holistically in three aspects as: firstly, global environmental issues which addresses the areas which includes energetic, ecology and economics globally. Secondly, the exchanges of these material returns to waste and pollutants to the environment; thirdly, corporate environmental accounting which focuses on the cost structure and environmental performance of a company.

There is a huge number of studies on variables that can determine whether firms disclose on the environment or not (Howes, 2019, Leontief, 2019 & Nwobu, Owolabi, & Iyoha, 2017). In this respect, many of the studies in this area, focused on external attributes of the firm

(Mohammed &Tamoi, 2018) by looking at the effect of factors such as the firm size, financial leverage, financial performance amongst others. Generally, it is believed that bigger firms will want to disclose more environmental information than what smaller firms will want to do. This is because big firms are more noticeable by the public and hence it is often more beneficial for them to do what is expected (Wang, Song & Yao, 2016). It is the case that bigger companies may be more inclined to be environmentally responsive than smaller ones because in most cases they have a higher stake and a more broad spectrum of stakeholders (Patten, 2020). Again, there is the view that bigger companies tend to be very visible even to regulatory bodies and hence come under scrutiny easily. Previous works in this area, have examined how the firm size can influence environmental disclosure (Adams, 2020).

Furthermore, companies are much concerned about this class of stakeholders and as such would do whatever is deemed necessary to allay their worries and address their interest. Therefore, in the bid to manage these classes of stakeholders companies have been known to disclose more information in a bid to become more transparent. Particularly, high leverage firms are disposed to disclosing much to show that they are willing and able to meet obligations (Nasar, 2016). As it is already known, high level of debts can affect the ability of the firm to carry on the cost associated with environmental disclosures and thus also such firms may not be able to handle the damages that may result when information is disclosed that is not to their benefit. Again, the profitability could be a very crucial factor that can influence environmental disclosure of the firm. The basis for this is that companies that are profitable may feel the need to report on the environment to improve relationship with stakeholders. Studies have revealed that when firms become profitable, it makes able to bear the costs of that comes with environmental disclosure and to also handle the outcomes that could follow when a firm reports environmental information that is not to the benefit of the firm (Howes, 2019).

2.2 Theoretical Framework

2.21 Legitimacy Theory

The legitimacy theory was used to underpin the study. This theory posits that the presence and operations of firms is ensured by market forces and community expectations, and hence an awareness of the broader concerns for society shown in community expectations becomes an essential requirement for an organization's survival (Mohammed & Tanimu, 2020). The theory builds on the assumption that an organization must maintain its social role by

addressing the needs of society and giving society what it wants. This assumption has been received support from some early studies such as those of Udo (2022). Legitimacy is a position that is an outcome of the joint opinion of society as regards the organization's operation. It is a social evaluation of corporate behavior that is considered acceptable, appropriate or/and desirable. Therefore, it is expected that firms will assume acceptable behavior or at least to be seen in that manner with the intention that they are perceived to be good corporate citizens.

Legitimacy theory is useful as it provides information to users of the accounts to justify or legitimize the company's continued operations within that society. The framework of legitimacy theory can aid in evaluating existing practices to obtain a better understanding of these practices and procedures. Also, legitimacy theory is achieved by demonstrating that companies' activities are in concordant with social values and more so these organisations are continually seeking to operate within the societies.

2.3 Empirical Review

Egbunike and Tarilaye (2022) investigated the determinants of environmental disclosures of listed manufacturing firms in Nigeria for the period 2019-2021. Multiple regression was used for the analysis. The study showed that board composition influences environmental disclosure of manufacturing firms in Nigeria.

Using the Generalised Least Square, Udo (2022) evidenced that, board composition, financial leverage, existence of foreign directors on the board improves environmental disclosure (ED) from 2012-2018.

Oshiole, Elamah and Amahalu (2021) investigated the interactions between environmental accounting and profitability of sampled oil and gas Nigerian firms from 2012-2017. The study showed that environmental expenditure did not affect net profit. However, Handoyo and Angela (2021) evidenced that size, ownership concentration, age, and leverage improve environmental disclosure in Indonesia from 2014-2016.

Mohammed and Tanimu (2020) examined the determinants of environmental disclosure of oil and gas companies in Nigeria from 2009 to 2018 using panel multiple regression. The study population covered 9 listed oil and gas companies. The study confirmed that firm age

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reduces environmental disclosure significantly while firm size improves environmental disclosure.

3. MATERIAL AND METHOD

This study employs a longitudinal research design. The study population comprises of 12 oil and gas companies from 2014-2022 financial year. In computing the data for qualitative disclosures from annual reports, the disclosure index is generated using the Cooks dichotomous method. Under the Cooks method, if an item is disclosed, it is scored as 1, if not it is scored as 0 and items not applicable to every company is scored not applicable. Each item is treated equally. The formula is presented thus:

$$C_j = \frac{T = \sum_{i=1}^{n} d_i}{M = \sum_{i=1}^{m} d_i} \quad \text{……Eqn 1.}$$

Where

C_j =total compliance score for each firm and

$0 \leq C_j \leq 1$. T is the total number of items disclosed (di) by company j

M = maximum number of applicable disclosure items for firm j.

In addition, the relevant regression diagnostic tests such as normality, multicollinearity, heteroskedasticity and serial correlation was also conducted.

The study mirrored the models adapt of Egbunike and Tarilaye (2017). The models are presented below:

$ENVDIS_{it} = \partial_0 + \partial_1 FSIZE_{it} + e_{it}$…… …… Eqn 2.

$ENVDIS_{it} = \partial_0 + \partial_1 PRF_{it} + e_{it}$…… …… …… Eqn 3

$ENVDIS_{it} = \partial_0 + \partial_1 LEV_{it} + e_{it}$…… …… ……Eqn 4.

Where:

ENVDIS	=	Environmental disclosure index
PRF	=	Profitability
FSIZE	=	Firm size
LEV	=	Leverage
μ	=	Stochastic term
i	=	number of sampled cross-sectional firms
t	=	time period of the sampled companies 6

The apriori signs are $\partial_1 > 0$, $\partial_2 > 0$, $\partial_3 > 0$ and $\partial_4 > 0$

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Table 1: Variable Measurement

Variable	Description	Measurement	Apriori sign
Dependent Variable			
ENVDIS-index	Environmental disclosure index	Index computed using Cooks method on checklist	
Independent Variables			
FSIZE	Firm size	Log of total assets	+
LEV	Leverage	Debt-equity ratio	+
PROF	Profitability	Profit after tax	+

Source: Researcher's compilation (2024)

4. RESULT AND DISCUSSIONS

4.1 Data Analysis

4.1 Preliminary Analysis

Table 2: Descriptive Statistics

	ENVD	ROA	LEV	FSIZE
Mean	0.43357	4.198609	1.823034	7.211272
Median	0.357143	3.462141	1.215395	7.077112
Maximum	1	232.6198	43.0102	9.637756
Minimum	0	-88.9854	0.256443	4.937655
Std. Dev.	0.199556	13.40564	2.130501	0.909296

Source: Researcher's Compilation (2024)

The descriptive statistics of the data is presented in Table 2. As observed, ENVD has a mean of 0.43357 with maximum and minimum values of 1 and 0 respectively. The result implies that there is about 43% of environmental disclosure in the organisation is under consideration. The mean ENVD suggest that on the average the level of attention given to ENVD issues is still quite low. The standard deviation showing the dispersion of the data about the mean is quite low at 0.199 which further suggest clustering of the firm specific scores around the mean. Hence there is need for companies to improve on their reporting on ENVD related issues. ROA has a mean value of 4.19 with maximum and minimum values of 232.6198 and -88.985 respectively. The standard deviation of 13.4056 reveals the dispersion of the firm

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specific values from the distribution mean. The average LEV is 1.8230 with maximum and minimum values of 43.0102 and 0.256 respectively and standard deviation of 2.1305.

The mean value for FSIZE stood at 7.2113 with maximum and minimum values of 9.6377 and 4.937 respectively with a standard deviation of 0.909, which implies the presence of addition to total assets of the organisation.

Table 3: Pearson Correlation Matrix

	LEV	**ROA**	**FSIZE**	**ENVD**
LEV	1			
ROA	0.384071	1		
FSIZE	-0.36868	-0.0244	1	
ENVD	-0.08706	0.109934	0.522008	1

Source: Researcher's Compilation (2024)

From Table 3, the correlation coefficients of the variables are examined. However of particular interest to the study is the correlation between the ENVD and the independent variables. As observed, a positive correlation exists between ENVD and the following variables; ROA (r=0.1099), and Firm Size (r=0.522). The positive coefficient suggests that an increase in these variables could be associated with increases in ENVD and vice-versa. On the other hand, a negative correlation suggests that increase in these variables could be associated with decreases in ENVD and vice versa. Though providing some level of insight into the degree and direction of relationship between the variables, the correlation analysis is limited in its inferential ability mainly because it does not imply functional dependence and hence causality in a strict sense.

Table 4: Diagnostic Tests

	VIF	Normality	Breusch-Godfrey Serial Correlation LM Test	Breusch-Pagan-Godfrey test for Heteroskedasticity	Ramsey Reset
FSIZE	4.699	34.8040 (0.000)			
LEV	1.8185	98.754 (0.000)	0.1344	0.3715	0.8891

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FPER	3.2770	29.5932
		(0.000)

Source: Researcher's Compilation (2024)

The test of residuals for normality is conducted assess the normality of the model residuals, when residuals are not normally distributed, it denotes the presence of significant outlines in the data which affects the standard errors and then the significance levels of the coefficients. The Jacque bera and p-value statistics suggest that the data is normally distributed and the presence of outliers is unlikely. The variance inflation factors (VIF) above are below 10 suggests none gave serious indication of multicollinearity. The test for Heteroskedasticity was carried out on the residuals as a precaution. The results showed probabilities in excess of 0.05 which lead us to reject the presence of Heteroskedasticity in the residuals. The performance of the Ramsey RESET test showed high probability values that were greater than 0.05, meaning that there was no significant evidence of misspecification. The Lagrange Multiplier (LM) test for higher order autocorrelation reveals that the hypotheses of zero autocorrelation in the residuals were not rejected. This was because the probabilities (Prob. F, Prob. Chi-Square) were greater than 0.05. The LM test did not, therefore, reveal serial correlation problems for the model. The variables redundancy test confirmed that the variables reflect a considerable level of distinctiveness and as such none could be eliminated.

4.2 Text of Hypotheses

The univariate regression analysis presented in three (3) models was used to test each research hypotheses. The regression estimate is presented in table 5:

Table 5: Regression Results

	Apriori sign	**Model 1**	**Model 2**	**Model 3**
C	+	-1.3606	5.715	-0.2169
		(1.3892)	(1.5043)	(1.2975)
		(0.3531)	(0.0125)	(0.8738)
FSIZE	+	0.5865		
		(0.4367)		
		(0.2122)		

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LEV	+		- 1.06653 (0.4141) (0.4497)	
FPERF	+			0.5514 (0.2367) (0.0473)
R^2		0.3735	0.855	0.734
AdjustedR^2		0.095	0.682	0.415
S.E of regression		2.3055	2.894	1.7235
F-statistic		4.3415	4.933	21.302
P(f-stat)		0.016	0.040	0.000
D.W		2.09	2.10	1.94

Equation 1 results shows the R^2 is 0.3735 which suggest that the firm size model explains about 37.4% of systematic variations in market value. The F-statistic 4.341 (p-value = 0.016) indicates joint statistical significance of the model. The D.W statistics of 2.09 indicates the presence of serial correlation in the residuals is unlikely. Firm size was found to exert a positive (0.5865) but has an insignificant (p=0.4367) effect on ENVD at 5% level.

Equation 2 shows the R^2 of the regression is 0.455 which suggest that the model explains about 45.5% of systematic variations in ENVD. The F-statistic 4.933 (p-value = 0.040) which is significant at 5% and suggest that the hypothesis of a significant linear relationship between the independent and independent variables cannot be rejected. It is also indicative of the joint statistical significance of the model. The D.W statistics of 2.10 indicates the presence of serial correlation in the residuals is unlikely. LEV was found to exert a negative (-1.0665) but not statistically significant (p=0.4497) effect on ENVD at 5% level.

Equation 3 shows the R^2 of the regression is 0.534 which suggest that the model explains about 53.4% of systematic variations in ENVD. The F-statistic 21.302 (p-value = 0.00) suggests that financial leverage reduces ENVD. The D.W statistics of 1.94 indicates the presence of serial correlation in the residuals is unlikely. PFERF was found to exert a positive (0.5514) and statistically significantly (p=0.0473) effect on ENVD at 5% level.

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4.2.1. Hypothesis One

H_{01}: Firm size has no significant effect on environmental disclosure

The results shows that company was found to exert a positive (0.5865) but not statistically significant (p=0.4367) effect on ENVD at 5%. Hence, the researchers accepted that company size has no significant impact on environmental reporting in quoted oil and gas companies in Nigeria. Justifiably, it is believed that bigger firms will want to disclose more environmental information than what smaller firms will want to do. This is because big firms are more noticeable by the public and hence it is then more beneficial for them to do what is expected.

4.2.2. Hypothesis Two

H_{02}: Firm leverage has no significant effect environmental disclosure

From equation 2, LEV was found to exert a negative (-1.0665) but not statistically significant (p=0.4497) effect on ENVD at 5% level. Hence, the researchers accepted null hypothesis 2 above. Hence, the study further confirmed that leverage has a negative insignificant effect on environmental reporting in quoted oil and gas companies in Nigeria.

4.2.3. Hypothesis Three

H_{03}: Financial performance has no significant effect environmental disclosure

Equation 3 as presented in table 5 evidenced that FPERF exert a positive (0.5514) and statistically significant (p=0.0473) effect on ENVD at 5% level. Hence, hypothesis 3 was rejected. Hence, the model is restated financial performance has a positive significant effect on environmental disclosure. By implication, when firms become profitable, it tends to make them more able to bear the costs of that comes with environmental reporting and to also handle the outcomes that could follow when a firm reports environmental information that is not to the benefit of the firm.

Table 6: Summary of Results

Null Hypothesis	**1**	**2**	**3**
Hypothesis Statement	Firm size has no significant effect on environmental disclosure	Firm leverage has no significant effect on environmental disclosure	Financial performance has no significant effect on environmental disclosure
Reported P-Value	0.2122	0.4497	0.0473

Benchmark p-value	<0.005	<0.005	<0.005
Decision on Null Hypothesis	Accept	Accept	Reject

CONCLUSION AND RECOMMENDATIONS

The study examined the determinants of environmental reporting. The findings of the study reveal that profitability improves environmental reporting of quoted oil and gas companies in Nigeria significantly. Meanwhile, leverage does not affect environmental reporting in quoted oil and gas companies in Nigeria. Also, company size has minimal effect on environmental reporting in quoted oil and gas companies in Nigeria. The study concludes profitability and leverage are major drivers of environmental disclosure significantly. Consequently, the following recommendations were made:

1. though financial performance motives environmental performance, it should not be used as basis for selective environmental performance.
2. firms irrespective of their leverage levels should improve their environmental performance.
3. both small and big firms need to improve their environmental performance.

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