



**CORPORATE ATTRIBUTES AND ENVIRONMENTAL ACCOUNTING
DISCLOSURE OF LISTED INDUSTRIAL FIRMS IN NIGERIA**

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Abstract

Environmental impacts of companies' activities have resulted into agitation for increased in environmental accounting disclosure, while the significance of corporate performance propelled companies globally to look for strategies of reducing the negative impact of companies on the environment. This study therefore investigated the effect of corporate attributes on environmental accounting disclosure of Nigerian industrial goods companies. Specifically, the study investigated how environmental accounting disclosure is influenced by profitability, leverage, and firm size. The corporate annual reports and websites for the periods 2012-2021 were utilized as the main sources of secondary data. In testing the hypotheses, the study engaged the use of a multiple regression method to examine the data collected from the annual reports and corporate websites of the listed industrial goods companies in Nigeria. The findings of the study revealed a significant positive effect of profitability on environmental accounting disclosure. In addition, leverage exhibits negative but no significant effect, while firm size shows a significant negative effect on environmental accounting disclosure. The study recommends that companies should embark on policies and strategies that will enhance their environmental accounting disclosure in Nigeria.

Keywords: firm size, leverage, profitability, environmental accounting disclosure, Nigeria

1. Introduction

The increasing global concern for the environment, the demand for increased corporate disclosure, and the importance of sound corporate performance have triggered the need for more research into the value creation of environmental accounting disclosure for stakeholders. Stakeholders such as customers, governments and regulatory bodies, non-governmental organizations, local communities, investors, financial institutions, employees and society have been paying greater attention to the environmental impacts of firms in the areas of emissions of greenhouse gases, carbon footprint and disposal of toxic wastes (Baalouch et al. 2019; Akbas, 2016; Onyali et al. 2014).

Today, business firms are becoming more sensitively aware of their functional roles and responsibilities towards the operating environment. Environmental accounting disclosure is therefore; an important process used by companies to disclose environmental information and is affected by a diversity of factors such as profitability, leverage and firm size (Hussaini, et al., 2023; Mastrandea & Schneider 2018). These factors have been argued by researchers as having a role in determining environmental accounting disclosure (Nor, et al. 2014). Consequent upon the disclosure of environmental information, corporate organizations are compelled to be environmentally responsible in disseminating environmental information about their operations (Khairredine et al. 2020).

In addition, companies worldwide have started seeking ways of minimizing their undesirable effect on the environment by communicating environmental accounting information about their



activities (Akbas, 2014; Baalouch, et al. 2019). This has, therefore, increased studies (Hussaini, et al., 2023; Ullah, et al. 2013; Bhattacharyya, 2014) on environmental accounting disclosure by companies. Nevertheless, differences in environmental disclosure have been looked at in accordance with the company's characteristics (like corporate governance, auditor type, firm age) while few studies have investigated the attribute of companies environmental accounting disclosure in Nigeria in terms of profitability, leverage and firm size despite the increasing emphasis on disclosure processes (Oba & Fodio, 2012; Nhung, 2021).

To this end, many developed countries like Canada, Australia, and the United States of America have great concern with regard to the drivers of environmental disclosure (Akash, et al. 2022). However, in spite of Nigeria being one of the countries with environmentally sensitive industries, coupled with the increasing level of industrialization, not much has been done in the area of corporate attributes and environmental accounting disclosure (EAD). Hence, this study is driven by the desire for convergence between corporate attributes and environmental accounting disclosure for better disclosure. As a result, and in order to improve the (EAD), this study basically looks at corporate attributes and environmental accounting disclosure of quoted industrial goods companies in Nigeria.

2. Literature Review and Hypotheses Development

Conceptual Review

Environmental Accounting Disclosure

Environmental accounting disclosure is a statement that depicts company's environmental burden, environmental policies, activities and impacts that are reported and published periodically to the public (Abubakar& Sodoq, 2023; Baalouch, et al. 2019). Environmental accounting disclosure as defined by Pricilia and Sofik (2021) is the umbrella term that shows different ways by which companies disclose information about their involvement on environmental issues to various users of financial statement. From the foregoing, environmental accounting disclosure entails where a company is voluntarily or statutorily required by law to provide in annual reports environmental management and environmental development cost.

Nhung et al. (2021) claim that companies through environmental accounting disclosure, may seek to capture public perception toward their operation. By presenting the statistical outcomes of its environmental conservation efforts and involvement, it serves as an external function which allows a company to influence the decision-making of stakeholders (Ministry of environment Japan, 2002). Information about the environment acts as a communication tool between the business and its stakeholders. Hence, the significance of the environment and the negative effects of business activity on the environment necessitate disclosure. Therefore, disclosure could be incorporated into the company's annual reports. Alternatively, it could be presented separately (Ighoroje & Ozigbo, 2023; Badingatus et al. 2021; Akanet, 2013).

According to Nor et al. (2015), the need for firms to provide environmental disclosure these days is very important so as to save the world and it is proved that company with environmental disclosure can gain better performance. Based on these, environmental discovery by the companies decreases the gap between management and other stakeholders, which allows company to achieve competitive advantage, improves corporate image, enhances the value of stock and reduce cost of capital (Abubakar& Sodoq, 2023; Akanet, 2013; Kanda 2010; Dye 2001). Cormier and Magnan (1999) examined determinants of (EAD) from the direction of the benefits of reducing information asymmetry between managers and shareholders, and cost of getting the information by shareholders. They also looked at the costs from the use of environmental information by stakeholders other than shareholders as a result of firm's financial condition.

In the study by Suttipun and Stanton (2012), the determinants of environmental disclosure in the corporate annual reports were assessed. Multiple regression analysis was employed in order to



assess the determinants of environmental disclosure. The results revealed that 83% of corporations present environmental information in their financial reports. Companies in the resource industry group made the most disclosure of environmental information, while Agricultural and food industries presented the smallest disclosure among the group investigated.

Firm Size

The relationship between company size and the extent of environmental disclosure has been investigated by a number of studies. With a few exceptions, most of these studies have found a positive relationship between the company size and level of environmental disclosure (ED). Robson and Kinglsey (2023) and Patten (2017) argued that larger firms tend to disclose more information than smaller firms because of visibility concerns. Similarly, Cormier and Gordon (2011) state that, in the context of legitimacy theory, as a firm increases in size, it becomes more visible and therefore more accountable for environmental issues. Hence, larger firms are expected to provide more environmental information to present that their operations are legitimate and consistent with good corporate citizenship. Furthermore, it is suggested that gathering and disclosing this kind of information is a costly process and contrary to larger firms, small firms might not have sufficient funds for such costs (Jerry & Okenwa, 2023; Iniabasi, et al., 2023; Pahuja, 2009). Based on these explanations, large companies are expected to reveal high (ED) than small ones.

Leverage

Although leverage has been considered as an important company behaviour that can have an influence on the environmental disclosure, it is possible to say that there is no consensus in the literature on the relationship of this characteristic with the extent of disclosure. Leverage can affect the volume of (ED) in two-fold manner (Jerry & Okenwa, 2023; Andrikopoulos & Kriklani, 2013). It is argued that as firm debt (leverage) increases, the investors' monitoring demand for information also increases in order to keep them informed about operating performance of the organisation, including environmental performance. Furthermore, it is suggested that companies with higher leverage are expected to increase the volume of corporate disclosure to reduce agency costs (Ho & Taylor, 2017). Because of these reasons, a positive relationship between leverage and environmental disclosure can be expected and this argument is supported by the outcomes of the empirical studies such as Clarkson, Richardson and Vasvari (2014), Meng, Zeng, Tam, and Xu (2013), and Huang and Kung (2016).

In addition, Brammer and Pavelin (2008) argued that organisation with moderately lower leverage may be able to have sufficient funds for financing environmental disclosures and to have the opportunity to focus organizational activities that are only indirectly affect the financial success of the company such as voluntary disclosure by the reason of facing less pressure from creditors. In a similar vein, Cormier and Gordon (2011) suggest that (ED) may increase proprietary costs for high leveraged firms and such costs could make credit negotiations more difficult and costly. Moreover, it is contended that highly leveraged firms have less environmental issues to report because such companies are expected comply with environmental regulations (Wu, Linxiao & Sulkowski, 2016). By these reasons, a negative relationship between financial leverage and volume of environmental disclosure can also be expected. This negative relationship has also been acknowledged by empirical studies such as Brammer and Pavelin (2008), Andrikopoulos and Kriklani (2013), Wu et al., (2016), Ahmad et al., (2013), Ho and Taylor (2017) and Eng and Mak (2013).

Profitability

As leverage, the results of previous empirical studies provide mixed results with regard to the effect of profitability on the extent of environmental disclosure. Some studies found a positive relationship while other studies found a negative relationship. Moreover, some studies report that there is no significant effect of profitability on the volume of disclosure (Da Silva et al., 2010; Iniabasi, et al., 2023) and Kathyayini, et al., (2012). Despite these contradictory empirical results, a positive relation between profitability and the extent of environmental disclosure can be expected based on the argument



that more profitable companies may have sufficient funds for compensating costs of environmental disclosures (Brammer & Pavelin, 2008). It is also argued that companies with high profitability ratios may reveal more information so as to prevent negative attention that could stem from excess profitability and to increase their credibility among investors.

Theoretical Review

The theories underlying this study are stakeholder and legitimacy theories. However, the study was anchored on stakeholder theory based on the point that stakeholder theory regards environmental reporting as a way of managing stakeholders to gain support for the existence of the organization.

Stakeholder Theory

Stakeholder theory was propounded by Edward Freeman in 1984. Stakeholder theory is the association between the organisation's behaviour and the effect on its stakeholders (Belal & Owen, 2007). As a result, the existence of organization demands the support of the stakeholders whose permission must be sought and the organization's activities adjusted to gain that permission. A company must, therefore, adjust its operation to suit the interest of powerful stakeholders (Deegan & Blomquist, 2006). The theory has also been widely used as a reliable foundation for corporate traits and (ED) in accounting literature (Albitar, 2015). This is because stakeholders have influence over a company's resources and are concerned with how businesses behave in respect to environment (Olayinka & Ajao, 2021). Stakeholder theory also offers ways to deal with various stakeholders and their competing interests. Managers must use voluntary disclosure, particularly environmental disclosure, to interact with stakeholders in order to handle these conflicts (Otuya et al. 2019).

Legitimacy Theory

Legitimacy theory, put forward by George Akerl of in 1970 has been generally used in the environmental accounting research as providing sufficient views to environmental accounting information disclosure. Legitimacy theory assumes that a relationship exists between an organisation and the society in which the business operates. An organization is regarded as legitimate and can survive and grow if society sees that the organization operates within the confines of a value system acceptable to the society (Qian, et al. 2011). Legitimacy theory also emphasises that an organization's activities need to be, or appear to be, in agreement with the value system of the larger society where the organisation belongs. It is sensible to expect that companies will try to legitimize their activities through voluntary disclosure. As a result, legitimacy theory focuses on the relationship between organisation and the expectations of the society from the organisation. However, society consists of diverse interest groups having different capacity to influence organisations.

In conclusion, stakeholder theory provides processes of managing diverse stakeholders with multiple conflicting interests. Managing these conflicts requires the use of voluntary disclosure, specifically environmental disclosure, by managers to communicate with stakeholder and secure their approval. In addition, Stakeholder theory suggests that the interest of shareholders cannot be satisfied without meeting the interest of other stakeholders (Rubino & Napoli, 2020). In contrast, Hartikayanti et al. (2016) came to the conclusion that because the legitimacy theory only gives a limited amount of environmental information, it is unable to adequately explain corporate environmental disclosure. Thus, stakeholder theory regards environmental reporting as a way of managing stakeholders to gain support for the existence of the organisation. In addition, stakeholders are powerful over the company's resources and they accommodate theories of power that assume power differentials between managers and stakeholders (Deegan & Bloomquist, 2006).



Empirical Review

Profitability and Environmental Accounting Disclosure

Akash *et al.* (2022) investigated the determinants of social and environmental accounting information disclosure: an analysis of top 50 firms in New Zealand. The results presented that profitability is positively associated with quantitative-type disclosure. Alade and Odugbemi (2021) examined the determinants of environmental disclosure in oil and gas firms listed on the Nigerian Stock Exchange between 2009 and 2018. A total of fifteen (15) oil and gas firms were selected. Data were drawn from annual reports. The study was analyzed using descriptive statistics, goodness-of-fit evaluation test and binary logistic regression technique. The result presented that profitability (return on assets) has positive effect on quality of (ED) and were statistically significant while share ownership distribution had negative effect.

Ndukwe *et al.* (2015) empirically analyzed the determinants of environmental disclosures using oil and gas companies in Nigeria for 2008-2013. Cross-sectional research design was used. A total of 15 companies were selected from the oil and gas sectors. Secondary data was gotten from the annual reports, while the Binary regression technique was used for the analysis. Finding presented no significant relationship between Profit and corporate social responsibility disclosures.

A similar work carried out by Dibia and Onwuchekwa (2015) examined the determinants of environmental disclosures in Nigeria, the results of the study presented that Profit after tax appeared to have insignificant positive impact on the decision of a firm to reveal environmental information. Abdullah and Fatima (2014) exvaluated the determinants of environmental reporting quality in Malaysian. Regression was used to analyse data. The result indicated that profitability has no significant relationship with the value of environmental reporting. Therefore, the following is put to test in light of how profitability has an impact on the environmental accounting disclosure:

H₀₁: Profitability does not significantly affect environmental accounting disclosure.

Leverage and Environmental Accounting Disclosure

Many authors have conducted studies to establish the factors that affect how often firms disclose environmental information, and one frequent factor included in these studies is leverage. Based on the previous studies, the results obtained were mixed. Ohidoa *et al* (2016), Dibia and Onwuchekwu (2015), Prastiwi *et al* (2016), Suleiman *et al* (2014) they have documented that leverage do not influence the ability of a company to disclose environmental information. While in the study by Juhmani (2014) and Agbdan (2015) shows that leverage of a company can positively affects the ability of a company to make available in their annual report's environmental information.

Nhung (2021) investigated determinants of financial performance of listed firms manufacturing food products in Vietnam: regression analysis and Blinder–Oaxaca decomposition analysis. 30 listed food processing companies in Vietnam from 2014 to 2019. The data were analyzed by using STATA software. They reported that Leverage significantly negatively impacts return on sale. Pricilia and Sofik (2021) the study involved 33 listed firms in Indonesia Stock Exchange (IDX) that are consistently issued sustainability reporting during 2014-2016. Simultaneously test indicated that characteristics of the firm significantly explain the variance of environmental disclosure quality. However, partially test showed that leverage is the only variable significantly influenced environmental disclosure quality.

Alade and Odugbemi (2021) examined the determinants of environmental disclosure in oil and gas firms listed on the Nigerian Stock Exchange between 2009 and 2018. A total of fifteen (15) oil and gas firms were selected. Data were drawn from annual reports. The study was analyzed using descriptive statistics, goodness-of-fit evaluation test and binary logistic regression technique. The findings presented that financial leverage has positive effect on quality of environmental disclosure and were statistically significant while share ownership distribution had negative effect.



Ohidoa et al. (2016) examine the determinants of environmental disclosure indicated that leverage has no significant effect on the company's decision to disclose environmental information. A similar work carried out by Dibia and Onwuchekwa (2015) examined the determinants of environmental disclosures in Nigeria, the results of the study revealed an insignificant negative impact of leverage on disclosed environmental information by the Nigerian quoted companies.

A study carried out by Juhmani (2014) presented a significant and positive relationship between financial leverage and corporate disclosure. Abdullah and Fatima (2014) examined the determinants of environmental reporting quality in Malaysian. Regression was used to analyse data. The result indicated a significant positive relationship between leverage and the quality of environmental reporting. Hence, the following hypothesis is stated:

H₀₂: There is no significant effect of leverage on environmental accounting disclosure.

Firm Size and Environmental Accounting Disclosure

The size of a company has a significant role in decision making about the environment in which the company operate. Therefore, firm size may determine company's ability to disclose environmental information in their annual reports. Based on the researchers conducted by previous authors, the following results have been obtained. Setyorini and Ishak (2012) in their study on corporate social and environmental disclosure found out that firm size has positive association with disclosure. Cormier et al. (2009) revealed that firm size is one of the key drivers of environmental disclosure. Nawaiseh (2015) documented a positive significant relationship between firm size and (ED).

Jariya studied the determinant of environmental disclosure in annual reports of (SRI) Lankan listed manufacturing companies and found that firm size has positive influence with the level of corporate environmental disclosure. Burgwal and Vieira (2014) studied environmental disclosure determinants in Dutch listed companies and found a positive association between firm size and (ED). While Dibia and Onwuchekwu (2015) they have documented a negative relationship between firm size and environmental disclosure. Gatimbu and Wabwine (2016) also found a negative association between firm size and (ED).

Badingatus et al. (2021) assessed improving understanding on determinant of environmental disclosure and moderating effect of corporate governance. The research aimed to analyse the effect of company size, financial performance, and environmental performance on environmental disclosure using good corporate governance as the moderating variable. 23 companies from top 45 listed companies in Indonesia during the period of 2011-2016 were selected using purposive sampling technique. Data were analysed using Smart PLS 3.0 software. The result showed that the company size and environmental performance have a significant positive effect on (ED). Conversely, the effect of financial performance on (ED) is negative. Good corporate governance moderates the effect of company size on (ED). Akash et al. (2022) examined the determinants of social and environmental accounting information disclosure: an analysis of top 50 firms in New Zealand. Findings show that size is positively associated with both quantitative and qualitative-type disclosures.

Alade and Odugbemi (2021) examined the determinants of environmental disclosure in oil and gas firms listed on the Nigerian Stock Exchange between 2009 and 2018. A total of fifteen (15) oil and gas firms were selected. Data were drawn from annual reports. The study was analyzed using descriptive statistics, goodness-of-fit evaluation test and binary logistic regression technique. The findings of the study presented that firm size has positive effect on quality of (ED) and were statistically significant while share ownership distribution had negative effect.

Ahmad (2017) assessed the influence of firm attributes on environmental disclosure of listed breweries companies in Nigeria. The population of the study consists of five breweries companies listed on the floor of Nigerian stock exchange. The sample size of four companies. The sample was drawn based on data accessibility. Data were collected from annual reports for the period of five years that is from 2012 to 2016. Multiple regression technique was employed to analysis the data. Firm size is



used as proxy to measure the firm attribute. While contents analysis was maintained to measure environmental disclosure. The study found board size has negative significant influence on (ED), leverage has negative and insignificant influence on (ED). While firm size has positive insignificant influence on environmental disclosure, profitability has positive significant effect on (ED) of listed breweries companies in Nigeria.

Ohidoa et al. (2016) examine the determinants of environmental disclosure indicated that firm size has no significant effect on the company's decision to disclose environmental information. Ndukwe et al. (2015) empirically analysis of the determinants of environmental disclosures using oil and gas companies in Nigeria from 2008-2013. Cross-sectional research design was used. A total of 15 companies were selected from the oil and gas sectors. Data was obtained from secondary sources, while the Binary regression technique was engaged. Finding presented a significant relationship between company size and corporate social responsibility disclosures. Abdullah and Fatima (2014) examined the determinants of environmental reporting quality in Malaysian. Regression was used to analyse data. The result indicated positive significant relationship between firm size and the quality of environmental reporting.

Based on the literature review, the following gaps have been identified. Specifically, Study by Onyali et al. (2014) used data obtained from primary sources and secondary data from the annual report and corporate website of selected companies. Also, Baalouch *et al.* (2019), Odoemelam and Okafor (2018) and Ofoegbu *et al.* (2018) used corporate governance measures to measure the independent variables. This study makes use of other corporate attributes measure such as profitability, firm size and leverage as proxies for the explanatory variables. Previous studies concentrated on food processing companies, oil and gas and real estate Nhung (2021), Joseph *et al.* (2016) Ndukwe *et al.* (2015) this study concentrate on industrial goods sector because the activities of organization in this sector contribute more hazard than expected to the host community. The following hypothesis is formulated and tested:

H₀₃: There is no significant effect of firm size on environmental accounting disclosure.

3. Methodology

This study employed longitudinal design to examine corporate attributes and environmental accounting disclosure. This is because the study seeks to establish the connection between the study variables and the researcher has no control on the data, the study adopted the use of secondary data from the annual reports and corporate websites of the industrial goods sector for a period of ten years from 20012-2021. This is because yearly reports serve as a regular, trustworthy, and consistent means of communicating with key stakeholders (Erin et al. 2021). The population of the study is made of the entire thirteen (13) quoted industrial goods firms on the Nigerian Exchange Group, as at 31st December 2021. For the purpose of this study, all the quoted companies under the industrial goods sector on the Nigerian Exchange Group (NGX) were selected. The study employs a multiple regression method for the analysis.

Model Specification

An econometric model adapted from the work of Uwuigbe (2012) is hereby specified in order to assess how explained and explanatory variables interact:

Environmental Accounting Disclosure = f(Corporate Attributes)(1)

Environmental Accounting Disclosure = $\beta_0 + \beta_1(\text{Profitability}) + \beta_2(\text{Leverage}) + \beta_3(\text{Firm size})$ (2)

Environmental Accounting Disclosure (measured by disclosure index). Profitability, abbreviated as PROF, is based on earnings before interest and tax (EBIT). Leverage (LEV) is Measured by the ratio of total debts to total assets. Firm Size (FSZ) is based on total asset.

β_0 = Regression line's intercept, which is assumed to be constant; $\beta_{1,3}$ = The regression line's slope, or



independent variable. The independent variables that have an impact on the model but were not included are represented by the error term. 't' stands for the year or period, while 'i' stands for the company.

The functional form of the model could be presented explicitly as:

$$EAD = f(PRO, LEV, FSZ) \dots \dots \dots (3)$$

$$EAD_{it} = \beta_{0it} + \beta_1 PRO_{it} + \beta_2 LEV_{it} + \beta_3 FSZ_{it} + \mu_{it} \dots \dots \dots (4)$$

Table 1

Measurement of Variables

S/N	Variable Name	Description	Measurement	Source
1	Environmental accounting disclosure (EAD)	Dependent variable	Measure by disclosure index, coded 1 if the Company disclose, otherwise 0	Suleiman et al (2014)
2	Profitability	Independent variable	Measured as earnings before interest and tax EBIT	Ndukwe et al. (2015)
3	Leverage (LEV)	Independent variable	Measured by the ratio of total debts to total asset.	Nhung (2021) and Ndukwe et al. (2015)
4	Firm size (FS)	Independent variable	The natural log of total asset	Dibia and Onwuchekwu (2015)

Sources: Author's Compilation, (2023)

4. Data Analysis and Discussion of Findings

Table 2

Result of Descriptive Statistics of the Variables

	EAD	PRO	LEV	FSZ
Mean	2.521369	1.844657	0.091782	1.844924
Median	2.833213	1.868721	0.000000	1.868721
Maximum	2.995732	2.238580	3.401197	2.238580
Minimum	0.000000	0.000000	-3.218876	0.000000
Std. Dev.	0.921206	0.438338	0.910369	0.438338
Skewness	-0.305053	-0.368492	0.392108	-0.370316
Kurtosis	3.005588	1.478984	2.626844	1.479802
Jarque-Bera	177.9435	998.7646	74.58202	1000.076
Probability	0.106580	0.197534	0.320862	0.139754
Sum	327.7780	239.8054	11.93171	239.8402

Descriptive Analysis

The descriptive statistics as represented In Table 2 for the sample firms indicate that the mean values show a high level of consistency as they fall within the minimum and maximum scores from 2012 to 2021. The standard deviation reveals various levels of varied dispersion. Moreover, skewness and kurtosis reveal that all the variables are normally distributed at a 5% level of significance. In addition, the skewness and kurtosis of the variables are within the normally distributed range of +1.96 and +3 for a normally distributed population (Uttley, 2019). In addition, the skewness and kurtosis of



the sampled data achieve the test of normality as they are close to zero. Thus, the variables suggest normality.

Test of Variables

Table 3 shows the results of the correlation coefficient (r) test between the variables. The findings reveal an important relationship between and among the variables. Correlation coefficients are under 0.8, as seen by the Pearson correlation matrix, the threshold at which multicollinearity is typically predicted by earlier investigations (Shrestha, 2020). These results imply that there is no issue with the independent variables' correlation with one another.

Table 3

Correlation matrix between the variables

	EAD	PRO	LEV	FSZ
EAD	1.000000			
PRO	0.360635	1.000000		
LEV	-0.013808	-0.011231	1.000000	
FSZ	0.359513	0.699980	-0.011453	1.000000

Source: Author's Computation (2023)

The linear association or relationships between explain and explanatory variables were tested using the pairwise correlation coefficient. The correlation analysis equally helped in detecting the likelihood of multicollinearity among the study variables, the presence of which could have a devastating effect on the standard error of the variables. Table 3 present that the relationship between environmental accounting disclosure (EAD) and (PRO) is directly and positively significant. The coefficient value is 0.360635 and this indicates that one time increase in (PRO) will lead to 36.06 percent in environmental accounting disclosure (EAD). Leverage (LEV) has negative and direct relationship with (EAD) and one time increase in leverage will decrease (EAD) by 1.38 percent having coefficient value of -0.013808. The relationship between firm size (FSZ) and (EAD) is positive having coefficient value of 0.359513.

Post Estimation Tests

This section reveals the results of the post-estimation tests carried out such as serial correlation, heteroskedasticity and normality test

Serial Correlation Test

Breusch-Godfrey serial correlation LM test was used to assess the validity of the model assumptions inherent in the regression and tests for the presence of serial correlation. The result is as presented in Table 4.

Table 4

Breusch-Godfrey Serial Correlation LM Test

F-statistic	60.53191	Prob. F(2,124)	0.0549
Obs*R-squared	64.22122	Prob. Chi-Square(2)	0.0640

Source: Author's Computation (2023)

Table 4 shows the F-statistics and Obs*R-squared values of 60.53191 and 64.22122 with p-value of 0.0549 as well as prob-Chi –squared (2) of 0.0640 indicating the absence of heteroskedasticity in the model since the F-statistics and Obs*R-squared values with their p-values are greater than the critical value at 5% level of significance. It implies that the model is appropriately specified, absence of serial correlation and heteroscedasticity problem. This study concluded that the model fulfilled the assumptions of BLUE (i.e. best linear unbiased estimator) regression.



Table 5

Heteroskedasticity Test: Breusch -Pagan-Godfrey

F-statistic	0.061320	Prob. F(3,126)	0.9925
Obs*R-squared	0.096871	Prob. Chi-Square(3)	0.9922
Scaled explained SS	0.336606	Prob. Chi-Square(3)	0.9530

Source: Author's Computation (2023)

Table 5 above reveals the F-statistic and Obs*R-squared values of 0.061320 as well as 0.096871 with P-values and Prob. Chi-Square of 0.9925 together with 0.9922 respectively showing the absence of heteroskedasticity in the model since the F-statistic and Obs*R-squared values and P-values of 0.061320, 0.096871 and 0.9925 respectively are higher than the critical values at 5% level of significance. Therefore, it is concluded that there is never presence of Heteroskedasticity in the model.

Residual Diagnostics Tests and Jarque-Bera Normality Test

This figure presents the result of normality test using Jarque-Bera to assess the normality of the data

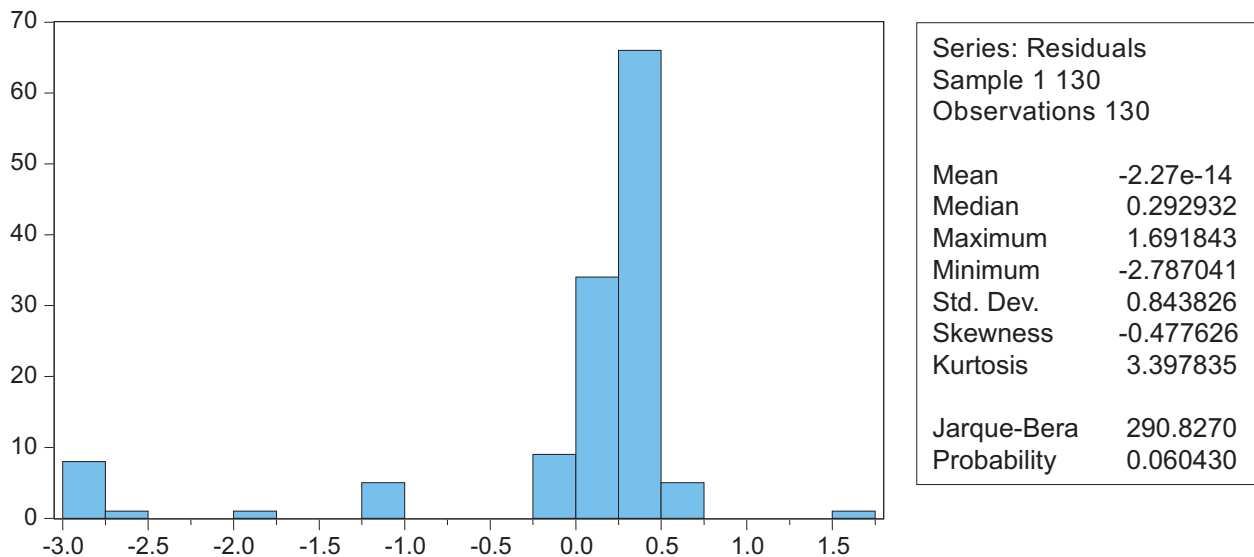


Figure 1: Residual Normality Test

The result reveals that the residual of the applied model is bell-shaped and normally distributed (JB 290.8270, $p = 0.060430 > 0.05$).

Table 6

Panel least squares regression result for the hypotheses

Table 6
Panel least squares regression result for the hypotheses

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PRO	58.95898	27.06729	2.178237	0.0313
LEV	-0.003581	0.082631	-0.043340	0.9655
FSZ	-58.20226	27.06719	-2.150288	0.0334
C	1.141370	0.325383	3.507772	0.0006
R-squared	0.660941			
Adjusted R-squared	0.640964			
S.E. of regression	0.853812			
F-statistic	8.056096			
Prob(F-statistic)	0.000059			

Source: Author's Computation (2023)



Regression Analysis

The regressed result the effect of corporate attributes on environmental accounting disclosure in Nigeria is presented in Table 6. The R-Squared test indicate 0.6609 and this imply that the explanatory variable has 66.09 percent influence on the explained variable and the remaining 33.91 percent is captured by the error term implying that there are many other forms of environmental disclosure that could improve on in the country. The F-statistics shows that the model is a good fit of and affirms that the explanatory variables are significant indicating 8.06 and probability of 0.000059. However, the null hypothesis that the coefficients are simultaneously equal to zero is rejected.

The outcomes of the regression model used to evaluate the three hypotheses are displayed in Table 6. The findings of the regression analysis negate the first hypothesis, which states that there is no significant effect of profitability on environmental accounting disclosure. The coefficient of (58.96) and the p-value (0.03) less than 5% significant. As a result, the null hypothesis is rejected while accepting alternate hypothesis. It suggests that profitable companies disclosed more environmental accounting information. The studies by Alade and Odugbemi (2021) and Ahmad (2017) on the influence of firm attributes on (ED) of listed breweries companies in Nigeria support this finding. The results, however, are in disagreement with those of Jariya (2015); Suleiman et al (2014) and Agbdam (2015) studies, where profitability had no significant effect on environmental disclosure.

Findings from the second hypothesis, however, show that leverage has an insignificant negative effect on (EAD). This is also supported by the coefficient of (-0.003) and p-values (0.97), both of which have insignificant levels greater than 5%. As a result, we accept the null hypothesis while rejecting the alternate hypothesis. The findings suggest that leverage has no significant effect on environmental (EAD). These findings are agreement with earlier research of Ohidoa, et al. (2016), Dibia and Onwuchekwu (2015), Prastiwi, et al. (2016), Suleiman, et al. (2014). The results, however, are not in consonant with the findings of Juhmani (2014) and Agbdan (2015) where leverage positively influences the ability of companies to make available environmental information in their reports.

The findings from the third hypothesis indicate that firm size has a significant negative effect on environmental accounting disclosures. This is demonstrated by the coefficient of (-58.30) and the p-value of (0.03). This result informed rejection of the null hypothesis and the alternate hypothesis to be accepted. The result clearly demonstrates that the larger the size of a firm, the lesser the (EAD). This indicate that the size of the firm results in less environmental information disclosure. The findings are in agreement with research by Dibia and Onwuchekwu (2015); Gatimbu and Wabwine (2016) which discovered that there is a strong negative correlation between firm size and environmental accounting disclosures. The findings, however, are not consistent with the studies by Setyorini and Ishak (2012); Nawaiseh (2015); Burgwal and Vieira (2014). The overall result shows that corporate attribute is significantly influence environmental accounting disclosure as indicated by profitability.

5. Conclusion and Recommendations

The primary goal of this investigation is to determine whether profitability, leverage and firm size have significant impact on environmental accounting disclosures. Three hypotheses were used to examine the corporate attributes and environmental accounting disclosure in Nigeria. According to the findings, there was a significant link between profitability and environmental accounting disclosures. Furthermore, it was evident that there was an inverse relationship between leverage, firm size and the environmental accounting disclosures. The study comes to the conclusion that corporate attributes have not promoted information symmetry since voluntary environmental accounting disclosures among Nigerian Industrial goods companies are generally low, with an average voluntary disclosure of 2.52% among the companies under examination.

Based on the provided information, the study recommends that government should make environmental accounting disclosures mandatory in Nigeria, also, corporation should embark on



policies and strategies that will enhance their environmental accounting disclosure in Nigeria. In addition, companies are required to present their transportation, environmental compliance, biodiversity, energy and water consumption, emissions, effluents, and garbage. To improve (EAD), the Nigerian listed companies should concentrate more on their corporate governance initiatives. This process would teach organizations the importance of improving environmental disclosure and governance, as well as improving the environmental involvement of Nigerian Industrial goods companies.

Given the limitations of this study, it is imperative to proceed with caution when drawing conclusions since they present a chance for additional research in this study. The analysis is, therefore, restricted to data from the Nigeria Exchange Group market for a ten-year observation period, and also the entire thirteen (13) quoted industrial goods firms on the Nigeria Exchange group as at 31st December, 2021. In addition, this study only looks at three corporate attributes. Future research can, therefore, look into other variables not included in this study, such as audit firm type, managerial ownership, the gender mix of directors, and foreign directors. Besides, all listed sectors can be considered in order to encourage comparative studies.

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Appendices

Environmental Accounting Check List

- (i) Pollution emission effluent discharge
- (ii) Waste
- (iii) Packaging
- (iv) Products and product development
- (v) Recycling
- (vi) Efficient use of materials
- (vii) Energy efficiency of products
- (viii) Product safety
- (ix) Rehabilitation
- (x) Discussion of environmental regulation and requirement
- (xi) Compliance with pollution laws and regulations
- (xii) Compliance with health and safety standard and regulations
- (xiii) Compliance status with environmental and /or health and safety such as ISO,EMS<BS OHSAS and PAS
- (xiv) Internal and /or external verification, review, scoping, audit and assessment of environmental performance and/or environmental disclosure
- (xv) Any mention on sustainability
- (xvi) Any mention on sustainability development
- (xvii) Receiving awards for environmental protection or safety
- (xviii) Environmental protection e.g. pest control
- (xix) Wildlife conservation
- (xx) Supporting ant-liter campaigns
- (xxi) Environmental educational and training
- (xxii) Environmental actions/lawsuits against the company
- (xxiii) any environmental issues other than the above