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Environmental Responsibilityas an Upshot of Firm Leverage in Industrial Goods Sector of the Nigerian Exchange Group.

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ABSTRACT

This study examines the effect of firm leverage on the environmental responsibility of industrial goods companies that are listed on the floor of the Nigerian Exchange Group for a period of 10 years which spanned from 2011 - 2020. Ex-post facto research design was adopted on a population of thirteen (13) industrial goods firms listed on the Nigerian Exchange Group as at the time of the study. Purposive sampling technique was utilized to arrive at the eight industrial goods firms used as sample size of the study. The secondary data that were used in the study were obtained from the annual reports and accounts of the sampled companies for the period under study. Mean and standard deviation were adopted in order to analyse the descriptive statistics of the data while simple regression analysis was used in testing the hypothesis formulated for the study at 5% level of significance. The result of the analyses revealed that firm leverage significantly affects the environmental responsibility of industrial goods companies in Nigeria (F = 21.539, p-value = 0.000). The researcher recommends that companies should endeavor to be more responsible for their activities and consider their decisions to include environmental and sustainable development issues in areas such as greenhouse gases, emissions, and waste that have a negative impact in the environment as whole.

Keywords: Firm Leverage, Environmental Responsibility, Industrial Goods Firms, Nigerian Exchange Group

I. INTRODUCTION

Ever since environmental disclosure by corporations has been increasing steadily in both size and complexity over the last two decades, research attention has been geared towards examining environmental issues such as pollution, deforestation habitat for endangered, and climate change that threatened the preservation of human life(Owolabi, 2022). In all, an unprecedented global awareness for environmental protection and campaign for sustainable economic development is made manifest in today's business environment characterised by increasing environmental hazards emanating from industrialization (Alade & Odugbemi, 2022).Coupled with achievement of economic improvement around the globe, industrialization has triggered off a number of undesirable production line pollution and more noteworthy land utilization, which have harmed the natural environment (Anis, Hanen & Bassem, 2020). Though the usage of natural resources such as energy is imperative to firms' drive for profit maximization, such usage also comes with a given number of environmental consequences as traceable to the ecological debasement and climatic contamination experienced in Nigeria (Okere, 2017). Thus, Onyali and Okafor (2018) submitted that the growing pressure on environmental responsibility from shareholders, government regulators and the public has necessitated the need for companies to pay more attention to the environmental impact of their operations. Because the usage of natural resources is indispensable to economic development of any country, environmental consequences accruing from the constant use of those natural resources must always stare man at the face and could lead to environmental degradation and atmospheric pollution as wholly experienced in Nigeria.

Lenders often need information concerning the corporate visibility of firms before they will consider them credit worthy. In order to gain this corporate visibility, many firms now engage in environmental reporting and practices

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that will boost their corporate environmental performance. Thus, corporate visibility, which is measured by media exposure and legal requirements, are some other reasons for environmental reporting. Business organizations also avoid loss of reputation arising from publicity of inappropriate behaviour by reporting on issues that could boost their intangible value. This is because such reporting entities want to convince the relevant providers of capital that they have taken corrective measures on risks arising from their economic, environmental and social impacts as a result of operations (Nwobu, 2017).

The financial and non-financial information signaled to investors by business organizations can alter their investment or financing behaviours. Institutional investors for instance are attracted to firms based on the firm's corporate environmental practices. In today's business environment where non-financial information such as environmental responsibility are gaining importance, long-term lenders are increasingly getting to be interested in corporate environmental responsibility reporting.Long-term capital providers are showing interests infirm's reporting of its environmental responsibility in order to project future opportunities, risks, liabilities and the general quality of operations of such company.

When business organizations succeed in making profit and solving environmental issues, they are bound to attract more capital from the capital market which plays key roles in allocating available financial resources for productive use. Therefore, business organizations cannot ignore issues of environmental responsibility, because it affords them greater opportunity to raise funds (equity or long-term borrowings) from capital markets to keep growing. However, business organizations can be re-educated by capital markets towards the right environmental behaviour. On the premises of these arguments, business organizations communicate through environmental reporting in order to attract investors and make their borrowing capacity high since it increases their credit-worthiness (Serafeim, 2014). Highly-levered firms are also under intense monitoring by capital providers. Involvement in environmental responsibility reporting reduces the monitoring cost of firms with high magnitude of leverage and this leads to lower costs of borrowing. Of note, also, it is easier for a more solvent firm to engage in environmental responsibility performance than it would be for less solvent firms that are still battling insolvency issues.

The industrial revolutions lead to economic improvement for most people in the industrialized society while bringing about unacceptable environmental degradation. With environmental responsibility accounting, companies and other organizations are called to increase their public trust and confidence amongst their stakeholders. This however will lead to a fair increase in the corporate value of the entities concerned since environmental responsibility is about firms disclosing information in respect of their environmental management practices and programs (Dibia & Onwuchekwa, 2015). Because it has been noted that firms that are environmentally responsible will enjoy increased patronage from stakeholders which will result in increased revenue in the long-run, the necessity for firms to be environmentally responsible is evidently apparent.

However, the rate of environmental responsibility among firms in Nigeria is rather poor regardless the potential corporate environmental responsibility has in improving the sustainability of firms (Nwobu, 2017). This poor environmental responsibilityreporting and performance could be influenced by selected attributes or characteristics that are either inherent in the firm or manipulated by the firm. Even though a number of empirical studies have been conducted to examine the effect of leverage on corporate environmental responsibility, the present study will contribute differently to body of knowledge by using the Environmental Performance Evaluation Matrix developed by Van Zyl (2013) to measure environmental responsibility. This study is to the researcher's best knowledge the first to use this matrix in examining how firm leverage drives the environmental responsibility of industrial goods firms in Nigeria.

1.2 Objective of the Study

The objective of this study is to ascertain the extent to which firm leverage affects the environmental responsibility of listed industrial goods companies in Nigeria.

1.3 Research Questions

1. To what extent does firm leverage affect the waste management practices of listed industrial goods companies in Nigeria?

1.4Research Hypotheses

H_{01}: Firm leverage does not significantly affect the waste management practices of listed industrial goods companies in Nigeria.

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II. REVIEW OF RELATED LITERATURE

2.1 Conceptual Framework

2.1.1 Environmental Responsibility Disclosure

Environmental responsibility disclosure which is alternatively termed environmental performance is the communication of environmental effects of the organizations' economic activities to different parties or groups in the society (Adekanmi, Adedoyin and Adewole, 2015). Accounting for environmental responsibility entails identifying, measuring and allocating environmental costs, and integrating these costs into business and encompasses the way of communicating such information to companies' stakeholders (Adebimpe, Ekubiat & Bokime, 2015). Environmental responsibility disclosure is used to record and report the sum total of activities and programs in which a company engages to preserve and sustain human environment.

As elaborate as they could, Musa, Teru and Bukar (2015) conceptualized environmental responsibility accounting to mean an inclusive field of accounting that basically provide reports for both internal use and external use whereby environmental information are generated to help make management decisions on pricing, controlling overhead and capital budgeting. Such environmental information are disclosed for the consumption of the interested public and the financial community (Eduardo, Igor & Ainhoa, 2016). This study measures environmental responsibility disclosure using the Environmental Performance Evaluation Matrix developed by Van Zyl (2013). The themes of the Matrix are: accounting for waste, measuring of waste, and setting of measurable targets for waste reduction. These three themes are summated to produce the index for Disclosure of Waste Management Practices.

2.1.2 Firm Leverage

In general a term, firm leverage is the ratio between a company's debt and equity. Pandey (2008) describes financial leverage as the presence of debt in a company's capital composition. This financial leverage involves use of debt and preference shares besides the owners' equity (Dare & Sola, 2010). Other than measuring the degree of debt financing, leverage ratios also measure a firm's financial risk (Kiprotich, 2017).

Huge debts directly reflect the proportionality of the financial risk a firm has. The three most commonly used leverage ratios are degree of financial leverage, debt ratio and debt/equity ratio. Degree of financial leverage measures how sensitive the operating income changes with changes in leverage levels (Earnings Before Interest and Tax/Earnings Before Interest and Tax – Interest Expense). Debt ratio shows the proportion of a firm's asset that has been financed by debt (total liabilities/total assets). Debt/equity ratio compares the amount financed by debt relative to that financed by the owners (total liabilities/net worth) (Kiprotich, 2017).

Firm leverage is the ratio of the total market value of a company's debt capital to total market value of its equity (Lumby & Jones 2011). A firm which has element of debt in its capital or financing structure is referred to as a levered or geared firm, whereas an all-equity firm is called unlevered firm.

2.2 Theoretical Framework

2.2.1 Legitimacy Theory

Legitimacy theory implies that a corporation's activities must be legitimate in the eyes of society to allow it to continue (Adekanmi, Adedoyin & Adewole, 2015). As business units endeavor to carry out their various commercial and production activities within the bounds and norms of their respective society, the Theory of Legitimacy proposes that businesses operate in a society according to the social contract upon which their survival and growth are dependent (Suttipun & Stanton, 2012). In Legitimacy theory, it is in the light of such social contract or agreement, which exists between a business unit and its host community that businesses carry out various socially desired actions in return for approval of its strategic objectives.

According to this theory, the sustainability, growth and survival of any business organization are based on both market forces and the expectations of the community. Consequently, an understanding of the broader concerns of society expressed in community expectations has become a necessary prerequisite for the sustainability, growth and survival of any corporate entity. A company's performance is therefore legitimate when it is judged to be fair and worthy of support, that is, when it is socially accepted. This implies that legitimacy gaps will arise when what is socially expected of the firm's behaviours are significantly different from the societal perceptions of same firm's behaviours (Muttakin et al., 2022). Thus, company engages in environmental responsibility disclosures as a means of legitimating its operations for the purpose(s) of either to gain and/or to extend its legitimacy (Welbeck, Owusu, Bekoe & Kusi, 2017).

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2.3 Empirical Review

Okafor, Egbunike and Amahalu (2022) while examining the determinants of environmental disclosure in listed Nigerian oil & gas firms using 11 firms from 2008 to 2020 and Panel Least Square regression analysis found that leverage positively affects environmental disclosure.

In the study carried out by Ezekwesili and Ezejiofor (2022) to ascertain the effect of firm attributes on environmental performance of quoted Nigerian conglomerates using a sample of 5 conglomerate firms from 2011 to 2020, the ordinary least square regression revealed that firm leverage has no significant effect on waste management expenditure.

Moshud, Olanrewaju and Abu (2021) equally found no significant effect of leverage on environmental disclosure of quoted firms in Nigeria, after carrying out a study with 82 firms from 2012 to 2016 using binary Logistic regression.

However, Salawu, Mamman, Dahiru, Ado and Yunusa (2021) concluded that leverage positively affects Environmental Disclosures in Nigeria of listed oil and gas firms, from the analysis carried out with data from 2012 to 2018 using Generalized Least Square.

In Vietnam, Nguyen (2020) assessed how leverage determines the environmental accounting information disclosure of firms using a sample of 87 companies from 2009 to 2019. The results of the panel regression model showed that firm leverage has a negative effect on environmental accounting information disclosure.

Akinlade (2020) realised that leverage does not significant influence the environmental disclosure of listed Nigerian non-financial firms. This conclusion was derived after using Ordinary least square (OLS) regression to analyse the data obtained from 33 non-financial firms from 2010 to 2019.

Onyali and Okafor (2018) examined the effect of firm characteristics on corporate environmental performance of quoted industrial goods firms in Nigeria. The secondary data sourced from annual reports and accounts of the sampled firms for the study period, 2008-2017 were analysed using multiple regression analysis which revealed that firm size, profitability and age positivelyaffect the waste management cost of industrial goods firms in Nigeria.

The study carried out by Adekanmi, Adedoyin and Adewole (2015) to assess the determinants of socio-environmental accounting of listed firms in Nigeria using 50 firms from 2005 to 2013 and ordinary least square regression analysis found that firm size and firm profitability positively affect socio-environmental reporting of listed firms in Nigeria.

Dibia and Onwuchekwa (2015) evaluated the determinants of environmental disclosures using oil and gas companies in Nigeria. Secondary data were sourced from the annual reports of a sample of 15 companies drawn from the oil and gas sectors of Nigeriafor 2008-2013 financial years while the binary regression technique was used as the data analysis method. The finding of the study showed that firstly; there is a significant relationship between company size and corporate social responsibility disclosures. Secondly there is no significant relationship between Profit and corporate social responsibility disclosures. Thirdly, there is no significant relationship between Leverage and corporate social responsibility disclosures. Finally, there is no significant relationship between audit firm type and corporate social responsibility disclosures.

III. METHODOLOGY

3.1 Research Design

For the purpose of this study, ex-post facto research design was deployed. This research design determines the extent to which two or more variables (that occurred in the past) are related (Abubakar, 2015). Ex-post facto research design was considered adequate and appropriate for this study because it can describe the statistical relationship between independent variables of the study and the dependent variable without the researcher having control of them.

3.2 Population of the Study

The study population consists of all the thirteen industrial goods firms listed on the Nigerian Exchange Group as at 2020. The study covered a period of ten years (2011 -2020). The following companies make up the population of industrial goods manufacturing companies in Nigeria.

i. Austin Laz & Company Plc
ii. Berger Paints Plc
iii. Beta Glass Plc.
iv. Cap Plc
v. Cement Co. Of North.Nig. Plc
vi. Cutix Plc.
vii. Dangote Cement Plc
viii. Greif Nigeria Plc
ix. Lafarge Africa Plc.
x. Meyer Plc.
xi. Notore Chemical Ind Plc
xii. Portland Paints & Products Nigeria Plc
xiii. Premier Paints Plc.

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Source: Nigerian Exchange Group (2020).

3.3 Sample Size Determination

For the purpose of this study, the researcher wanted to use all of the thirteen industrial goods manufacturing companies that are listed on NSE. However, judgemental sampling technique was deployed to select the companies that were used in this study since complete data for other three (3) companies from 2011 to 2020 were not readily available. In the same vein, Austin Laz & Company Plc. and Notore Chemical Industry were listed in 2012 and 2018 respectively. Thus, these two (2) companies were not included in the study. Summarily, five (5) companies were excluded from the population of the study to arrive at the following eight (8) sample participants: Berger Paints Plc., Beta Glass Plc., Cap Plc., Cutix Plc., Cement Company of Northern Nigeria Plc., Dangote Cement Plc., Greif Nigeria Plc. and Lafarge Africa Plc.

3.4 Method of Data Collection

This study employed secondary sources of data collection. The secondary data were obtained from the annual reports and accounts of the sample companies in order to achieve the objectives of the study. This is due to the fact that annual reports of the selected listed companies were readily available and easily accessible. More so, the data contained in the annual reports are deemed valid and reliable since they have been audited by external auditors.

3.5 Method of Data Analyses

Mean and standard deviation were used to analyse the descriptive statistics of the data while simple regression analysis is used in testing the hypotheses formulated for the study. The use of this regression analytical tool is justified since this study seeks to predict the value of a variable based on the value of an independent variable. The simple regression analysis used in this study was carried out at an alpha level of 5%. As a decision rule, if the p-value is greater than 0.05, the null hypothesis is accepted and vice versa.

3.6 Model Specification

For the purpose of this study, corporate environmental responsibility is surrogated by disclosure on waste management practices while the determinant is given as firm leverage. In order to be able to analyse the data using simple regression technique, the researcher constructed a model as follows:

$DWMP = f(FLev, \ldots)$ ----------eq 1

where, DWMP = Disclosure of Waste Management Practices

FLev = Firm leverage

In an econometric form:

$DWMP_{it} = a_0 + b_1FLev_{it} + e_{it}$…….eq 2

Where, a = constant

b = coefficient of the independent variable

e = error term

i = the firm in question

t = the time in question.

3.7 Measurement of Variable

Table 3.1 Measurement of Variables

Variable	Type	Acronym	Measurement
1. Disclosure of Waste Management Practices	Dependent	DWMP	Environmental Performance Evaluation Matrix developed by Van Zyl (2013)
2. Firm leverage	Independent	FLev	$\frac{\text{Total debt}}{\text{Total Equity}}$

Source: Researcher's Compilation (2022)

IV. DATA PRESENTATION AND ANALYSIS

4.1 Descriptive Statistics of the Variables

This study sought to ascertain the effect of firm leverage on corporate environmental performance of industrial goods companies that are listed on the floor of the Nigerian Exchange Group. The secondary data that were collected for the study are analysed in this chapter beginning with the descriptive statistics of the variables as shown in **Table 4.1** below. The statistical tools used in the descriptive statistical analyses of the study were mean and standard deviation.

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 12 Dec. 2022, pp: 724-732 www.ijaem.net ISSN: 2395-5252

Table 4.1 Descriptive Statistics

	Mean	Std. Deviation
Waste Management Practices	3.74	.078
Firm Leverage	.9572	.53468
Valid N (listwise)		

Source: Statistical Package for Social Sciences (SPSS) Version 22 Output, 2022

Table 4.1 above gives the descriptive statistics of the variable which indicates that firm leverage has a mean of 0.9572 with a standard deviation of 0.5347 while Disclosure of Waste Management Practices has a mean of 3.74 with a standard deviation of .078. The mean value of Waste Management Practices revealed that on average there is a moderately high disclosure of accounting for waste, measuring of waste, and setting of measurable targets for waste reduction disclose among the sampled firms.

4.2 Test of Hypotheses

H_{o1}: Firm leverage does not affect the disclosure of waste management practices of industrial goods companies in Nigeria.

Model Specification

$DWMP_{it} = a_0 + b_1FLev_{it} + e_{it}$

The results of the analyses are given below:

Table 4.2 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.465[a]	.216	.206	67552.425

Source: Researcher's Computation Using SPSS V. 22, 2022

Table 4.3 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98287762319.724	1	98287762319.724	21.539	.000[b]
	Residual	355939753763.164	78	4563330176.451		
	Total	454227516082.887	79			

Source: Researcher's Computation Using SPSS V. 22, 2022

Table 4.4 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-10376.414	15561.536		-.667	.507
	Firm Leverage	65969.792	14214.655	.465	4.641	.000

Source: Researcher's Computation Using SPSS V. 22, 2022

Table 4.2 above gives the regression results which indicate that the model of the Hypothesis I can be re-written thus: DWMP = -10376.41+ 0.465×FLev.

R (which is the coefficient of correlation) is 0.465 which represents about 46.5%. This means that the association between firm leverage and environmental responsibility is moderately strong. Also, R^2 which stands for coefficient of determination gives a value of 0.216 indicating that about 21.6% variation in environmental responsibility (measured by Waste Management Practices) is explained by variations in firm leverage. The Adjusted R^2 corrected the positive bias in the sample and gave a value that would be expected in the population as 0.206.

To corroborate the above results, **Table 4.3** gives the value of F statistics which indicates

how well the model can predict the values of the dependent variable. From the table, F = 21.539 at p-value = 0.000 which indicates that the model is a good predictor of environmental responsibility. **Table 4.4** shows the values of the coefficients of the model: b_1 = 0.465 (t = 4.641, p = 0.000). Thisreveals that the coefficient is different from zero since the p-value in the test is less than 0.05. The value for b_1 shows that an increase in firm leverage by 1 unit will lead to an increase in environmental responsibility by 0.465 while the value for a_0 shows that environmental responsibility will have the value -10,376.41 if the coefficient of firm leverage is zero.

Since the p-value of the test in **Table 4.3** is less than 0.05, the null hypothesis is therefore rejected while the alternate hypothesis is accepted. Thus, firm leverage significantly affects the disclosure of waste management practices of industrial goods companies in Nigeria (F = 21.539, p-value = 0.000).

V. CONCLUSION AND RECOMMENDATION

The use of natural resources is indispensable to economic development; thus, a number of ugly environmental consequences such as the environmental degradation and atmospheric pollution experience in Nigeria could be traced to production activities of manufacturing firms and unconscious consumption of natural resources. In the light of this, the degrading of natural resources, the continued greenhouse gasemissions and corporate wastes in Nigeria are on the increase and of concern to the stakeholders; hence, the need for increased information about how the waste from the production activities of industrial goods firms are measured, accounted for and reduced.

The empirical evidence on the effect of leverage on environmental responsibility confirmed that a direct promotion of environmental sustainability is positively driven by increases in firm leverage. Previously, it was argued that firms are expected to engage in environmental responsibility accounting because of the demands of moral philosophy and corporate social responsibility. However, this possibility of the existence of a financial impetus for responsible corporate environmental behaviour is then sufficient to reposition the debate from the sphere of moral philosophy and business ethics to that of modern economics and demands of legitimacy. It is easier for a more solvent firm to engage in environmental responsibility performance than it would be for less solvent firms that are still battling insolvency issues.It is recommended that in order to gain this corporate visibility, management should engage in environmental reporting and practices that will boost their corporate environmental performance.

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