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EFFLUENT DISCLOSURE AND MARKET VALUE ADDED OF LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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ABSTRACT

*This study assessed the effect of effluent disclosure on market value added of listed industrial goods firms in Nigeria for a twelve (12) year period covering from 2012-2023. Ex-Post facto research design was employed. Twelve (12) listed industrial goods firms constituted the sample size of this study. Secondary data were extracted from the annual reports and accounts and sustainability reports of the sampled firms and were analysed using E-Views 10.0 statistical software. The study employed inferential statistics using Panel Least Square (PLS) regression analysis. Findings from the empirical analysis showed that effluent disclosure (β_1= 0.164494; p-value = 0.000000) has a significant and positive effect on market value added of listed industrial goods firms in Nigeria at 5% level of significance. The study recommended that corporate organizations should ensure that they **g**et ahead of regulation by preparing their businesses for likely mandatory environmental reporting rules, thereby gaining competitive edge when it comes to performance on the stock market, access to capital and winning tenders*

1. INTRODUCTION

The dynamic nature of the environment and its associated cost to humanity has generated concerns of stakeholders in search of ways of ameliorating the adverse impact of activities of various companies; emphasizing the need for environmental impact assessment and reporting. There are many cases of respiratory infection and chronic obstructive pulmonary diseases as a result of industries environmental pollution and climate change issues, ecological damage and natural resources depletion (Aruna, Orji-Okafor & Amahalu, 2024). Environmental Information (EI) falls within the class of information that is voluntary in disclosure by listed

firms in Nigeria. Onyema (2015) posited that there are mandatory and voluntary disclosures as required by the Nigerian Exchange Group (NGX) and other regulatory bodies that oversee the preparation, presentation and publication of financial information. However, in France, the law requires that annual report of companies should include details of their commitment towards environmental and social development. Likewise, in Sweden, all companies owned by the state are compelled to include evidence of sustainability commitment in their published annual reports. This requirement is however tailored in compliance with Global Reporting Initiatives (GRI) guidelines. Awe (2017) pointed out that it is mandatory for companies operating in United State of America (USA), Denmark and the Netherlands to present information regarding the environment in which they operate (Okudo, & Amahalu, 2023).

Financial analysis is the process of evaluating businesses, projects, budgets, and other finance-related transactions to determine their performance and suitability. Typically, financial analysis is used to analyze whether an entity is stable, solvent, liquid, or profitable enough to warrant a monetary investment (Ezechukwu, Ndubuisi, & Okudo, 2022). Investors use financial statement analysis to assess a company's profitability, growth potential, and financial stability. This analysis enables investors to identify companies that are likely to generate good returns on investment and avoid companies that are risky (Amahalu, Okudo, Okafor, & Onyeka, 2023). Environmental reporting or disclosure has advanced in the last few years, although not mandatory in most countries including Nigeria. The business context in which corporate environmental professionals must work is rapidly changing. Competitive pressures in the world economy are pushing companies to ensure that all endeavors contribute to the creation and protection of shareholder value.

In recent time, there has been increased interest in full disclosure by firms due to recorded cases of worrisome financial scandals locally and internationally. The migration from reporting with local standards to reporting with global sets of international standards like the IFRSs has further renewed the interest in full disclosure by firms. Consequently, studies have shown that for firms to fully disclose their overall wellbeing *vis a vis* their entire activities, disclosures on environmental and social concerns should form part of or be integrated into the various financial reports (Okudo, Amahalu, Obi & Okafor, 2022). Surprisingly, indications from prior research evidence suggest that while a good number of firms now voluntarily disclose costs and related issues that are associated with environmental activities, there are instances where companies eschew from reporting unfavourable outcomes on environmental concerns. This possibly is attributable to arguments that reporting negative externalities may

have consequences on firms, hence, the minimal or non-disclosure of environmental activities by most companies in Nigeria and other developing countries.

1.1 Objective

It is against this backdrop, that this study sought to examine the effect of effluent disclosure on market value of listed industrial firms in Nigeria.

1.2 Hypothesis

H_o: Effluent disclosure has no significant effect on market value added of listed industrial goods firms in Nigeria

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Effluent Disclosure

Effluent is wastewater - treated or untreated - that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters (Ndubuisi & Okudo, 2023). Effluent only refers to liquid discharge. Effluent refers to wastes discharged into surface waters (Amahalu, Aruna, & Orji-Okafor, 2024). An effluent cost a fee or tax to be paid on discharges into the environment, based on the quantity and/or quality of discharged pollutants. Waste is unwanted or unusable materials. According to Amahalu, & Okudo (2023), waste is "any substance which is discarded after primary use, or is worthless, defective and of no use. A by-product by contrast is a joint product of relatively minor economic value. A waste product may become a by-product, joint product or resource through an invention that raises a waste product's value above zero. Examples include municipal solid waste (household trash/refuse), hazardous waste, wastewater (such as sewage, which contains bodily wastes (feces and urine) and surface runoff), radioactive waste, and others".

2.1.2 Market Value Added

Market value added (MVA) is the difference between the current total market value of a company and the capital contributed by investors (including both shareholders and bondholders) (Amahalu, Ezechukwu & Okudo, 2022). MVA is a wealth metric, measuring the level of value a company has accumulated over time.

It is calculated as: $MVA = V - K$

where MVA is the market value added of the firm, V is the market value of the firm, including the value of the firm's equity and debt (its enterprise value), and K is the total amount of capital invested in the firm (Okudo, Ezechukwu & Amahalu, 2022).

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MVA = Market Value of Stocks - Book Value of Stockholders' Equity

The market value (MV) of stocks is computed by multiplying the number of outstanding shares by the market price per share.

2.1.3 Effluent Disclosure and Market Value Added

Maintaining good levels of waste management efficiency is an essential requirement for building sustainable development. This is valid not only from an environmental and social perspective but also from an economic point of view. Environmental issues are also components of corporate social responsibility (CSR) aspects covering environmental implications of a company's operations, products and facilities, such as: eliminating waste and emissions; maximizing efficiency and productivity of resources; and minimizing practices that might adversely affect the enjoyment of a country's resources by future generations (Mbonu, & Ndubuisi, 2023).). The fast business improvement, the consumption of regular assets, and the ascent in natural mindfulness have driven corporate organizations to move their considerations from momentary benefits to long haul methodologies to accomplish maintainable administration and smooth advancement into another period (Mbonu & Amahalu, 2022).

2.2 Theoretical Framework

2.2.1 Legitimacy Theory

The legitimacy theory could be traced to Dowling and Pfeffer (1975). It rests on the concept of "Social contract" with the assumption that social contract exist between corporations and individual member of the society and in order to bridge the legitimacy gap between the firm and the environment in which its operation is carried out, it is pertinent that various disclosure strategy need to be considered. Legitimacy theory explains companies' considerations, concerns and expectations in relation to their actions/activities which ought to be legitimate in the views of stakeholders who at all time expect that companies would conduct themselves in a socially, acceptable and safe manner. As organizations continue to operate within the domain and norms of the society, it is believed that they will use several disclosure strategies to preserve their respective images of being socially responsible corporate citizens.

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2.3 Empirical Studies

Prot, Mzenzi and Chalu (2021) investigated the influence of firm characteristics on environmental disclosure in an extractive industry in Tanzania. The study applies legitimacy theory as the foundation for theoretical perspective. The study uses the panel data of 18 firms from 2004 to 2018 as reported in Tanzania Extractive Industry Transparency Initiative (TEITI). Data was extracted from annual reports, and a Random Effects General Least Square (GLS) regression analysis model was used for analysis. The results showed that firm age, firm size, capital structure, and firm and ownership structure are significant factors that positively influence environmental disclosure. This indicates that older firms, large firms, high leveraged and firms owned by more block shareholders disclose more environmental information. However, although firm type and firm profitability factors seem to influence environmental disclosure, they are insignificant. The results help firms' management to improve their levels of environmental disclosure, participate in environmental activities as social citizens and also ensure that they disclose more environmental information for all users to access.

Jeroh (2020) focused on assessing the interrelationship between firms' attributes, corporate social responsibility (CSR) disclosure and measures of financial performance of firms. Secondary data were collated from the financial reports of a sample of 29 listed Nigerian firms in the financial service sector over a 10-year period (2009-2018). Estimation was based on the structural equation modeling (SEM) technique. The study observed that measures of firm performance, firm value and capital structure exert significant influence on CSR disclosure respectively; but the same was not the case for ownership structure and board attributes. Also the study found that firm value, capital structure, ownership structure and board attributes do not have significant influence on the financial performance of firms.

Yahaya (2018) examined the environmental disclosure and financial performance of Listed Environmentally –Sensitive Firms in Nigeria. Data were analyzed using descriptive statistics, correlation analysis and multiple regression. The result indicated that environmental disclosure and financial performance have positive and significant relationship.

3. MATERIAL AND METHOD

The study adopted the *ex post facto* research design. The population of the study comprised of 12 industrial goods firms in Nigeria as at year ended December 2023. They include: Austin

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Laz & Co, Berger Paints Plc, Beta Glass Company, CAP Plc, Cement (BUA) Coy Of Northern Nig, Cutix Plc, Dangote Cement, Greif Nig. Plc, Lafarge, DN Meyer, Portland Paints, Premier Paints. Considering the limited number of industrial goods firms and the need to adopt an equal sample size, the census sampling method was employed in choosing the entire twelve (12) industrial goods firms in Nigeria as the benchmark sample size for equal representation. The study used secondary data sourced from the annual reports and sustainability report of the sampled firms. The study covered a period of twelve (12) financial years (2012-2023).

Table 1 Operationalisation of Variables

Variable Type	**Indicators**	**Variable Symbols**	**Definition and Measurement**
Independent Variable (Effluent Disclosure)			
	Effluent Disclosure	EFD	Total Effluent Disclosure Score / Maximum Effluent and Waste Treatment Disclosure Score for a Firm
Dependent Variable			
	Market Value Added	MVA	Market Value of Stocks - Book Value of Stockholders' Equity

This study adopted the Global Reporting Initiative (GRI) framework disclosures according to the G4 guidelines for the purpose of developing the Environmental cost disclosure indices. Environmental Reporting was evaluated by 12 indicators: Materials; Energy; Water; Biodiversity; Emissions; Effluents and Waste; Products and Services; Compliance; Transport; Overall; Supplier Environmental Assessment; Environmental Grievance Mechanisms (refer to appendix A).

All the above indicators were rated on a scale from 0 to 3 points (This is to enable us assign values to variables, since the study utilised content analysis) (Yongliang, Wen & Li, 2020). When a company does not take into account the specific indicator at all, it is rated with 0 (that is, non-reporting). A company is ranked 1 or 2 depending on the broadness of the description (for example, 1 if the company only names the indicator and 2 if there is a very poor or unclear description (partial reporting). The company is rated 3 if it takes the indicator into consideration with a satisfying description (full disclosure). So, a total score for

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environmental environmental disclosure could reach the maximum score of 36 (12 x 3 = 36) (Okafor, Egbunike & Amahalu, 2022).

Therefore,

EDI =TDP/MP…….Eqn 1.

Where;

EDI = Environmental Disclosure Index

TDP = Total Disclosure Points of a Firm

MP = Maximum Points for a Firm

$MVA_{it} = \beta o + \beta_1 EFD_{it} + \mu_{it}$ ……..Eqn 2.

Where:

βo is the intercept of the regression.

β_1 = the coefficient of the regression

MVA_{it} = Market Value Added of firm í in period t

EFD_{it} = Effluent Disclosure of firm í in period t

í = individual firms (1,2,3...12)

t = time periods (2012, 2009 ... 2023)

μ_{it} = Error term

4. RESULT AND DISCUSSIONS

4.1 Data Analysis

Table 2 Panel Least Square Regression Analysis testing the effect of EFD on MVA

Dependent Variable: MVA

Method: Panel Least Squares

Date: 07/07/24 Time: 06:11

Sample: 2012 2023

Periods included: 12

Cross-sections included: 12

Total panel (balanced) observations: 144

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.367965	0.019983	18.41375	0.0000
EFD	0.164494	0.016663	9.871597	0.0000

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R-squared	0.234134	Mean dependent var	0.483231
Adjusted R-squared	0.228741	S.D. dependent var	0.131960
S.E. of regression	0.115889	Akaike info criterion	-1.458573
Sum squared resid	1.907103	Schwarz criterion	-1.417326
Log likelihood	107.0173	Hannan-Quinn criter.	-1.441812
F-statistic	43.41109	Durbin-Watson stat	1.845688
Prob(F-statistic)	0.000000		

Source: E-Views 10.0 Panel Regression Output, 2024

Table 3 has shown the meaningful role of effluent disclosure in determining the strength of market value added. The results are satisfactory in terms of standard analytic tests. The value of R-square is showing that 23% of the total variation in dependent variable (MVA) is explained by the independent variable (EFD) to the determination of market value added while the remaining 77% is caused by other explanatory factors outside this model and this is captured by the error term. There is no problem of autocorrelation in the model as shown by the value of Durbin-Watson stats of 1.845688. The overall performance of the model is satisfactory as shown by Prob(F-statistics) = 0.000000. From the above factual information it is clearly obvious that there is a positive significant relationship between the market value added and effluent disclosure.

MVA = 0.367965 + 0.164494EFD + £

This implies that Effluent disclosure (EFD) has a significant effect on market value added and that EFD is significant in forecasting the market value added of the sample firms. One unit increase in EFD will exert a corresponding increase in MVA. thus, this study upholds that effluent disclosure has significant a effect on market value added of listed industrial goods firms in Nigeria.

CONCLUSION AND RECOMMENDATIONS The Ministry of Finance should increase In Based on the positive relationship between effluent disclosure and market value added, it was recommended that: due attention should be paid to effluent and waste management costs by firms since such costs influence strategic decision.

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