

Corporate Environmental Disclosure Determinants and Financial Performance of Selected Listed Manufacturing Firms in Nigeria

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Abstract

This study examines the effect of corporate environmental disclosure determinants on financial performance of selected listed manufacturing firms in Nigeria. The study used ex-post facto research design, secondary method of data collection was employed with a population of fifty-two selected manufacturing firms, sample of ten manufacturing firms were used, data was obtained from the published annual report and financial statement of listed Manufacturing firms in Nigeria Exchange Group covering a period of ten years (2012-2022). Multi-collinearity technique was used to analyse the data, findings showed that industry type and firm size was significant with a direct effect on return on assets at 5% significant judging from p-value, while financial leverage was significant with an indirect effect on return on assets judging from p-value of the estimate that was less than 5% conventional significance level. Hence, the study concluded that adhere to environmental disclosure by listed manufacturing firm through lessening environmental impacts caused by manufacturing activities promotes return on assets, as well as, firms size; while, excessive debt worsens it.

Keywords: Environmental disclosure determinants, industry type, firm leverage, firm size, financial performance.

1. Introduction

The rapid expansion of the global economy has led to severe environmental degradation, manifested in unchecked waste dumping, widespread pollution, rising global temperatures, and frequent natural disasters (Angela & Handoyo, 2021). While industrialization and business expansion in Nigeria have driven economic development through innovation and improved product quality, it is important to acknowledge that this progress comes with environmental consequences (Oladimeji & Folayan, 2018). The negative consequence of this degradation on the ecological atmosphere and human life has necessitated the users of annual reports and various stakeholders to show concern and demand for the disclosure of quantitative and qualitative data on the environmental impacts of a firm annually (Atang & Eyisi, 2020). This challenge is mostly caused by companies' operation (Anyadufu, 2023).

Manufacturing companies account for a larger percentage of environmental pollution in the world ranging from noise pollution, water pollution, emission of carbon dioxide, improper waste disposal, and damage to social infrastructure such as roads, quarries, and breaking of pipelines (Tiamiyu et al. 2021). Lately, companies are no longer appraised based on their economic viability but rather on concerted efforts made at preserving the environment to achieve long-term sustainable development as a demonstration of intention and commitment towards future generations (Sekerez, 2017). Igbekoyi et al. (2021), added that the manufacturing sector has had a significant impact on

the Nigerian economy in recent times, particularly with the emergence of the coronavirus 2019 pandemic, which has redefined the importance of innovation in production processes for the economy's survival. Some economic developments are associated with environmental risks because most economic operations draw materials from forests, soils, seas, and waterways (Dyduch & Krasodomska, 2017).

The extent to which corporate environmental disclosure influences financial performance in Nigerian listed manufacturing firms' remains unclear, necessitating investigation to inform policy and practice. The quality and transparency of environmental disclosure by Nigerian listed manufacturing firms are unclear, potentially leading to environmental risks and financial losses for investors and stakeholders (Omaliko et al, 2020). The current state of corporate environmental disclosure in Nigerian listed manufacturing firms may not adequately address the needs of stakeholders, including investors, regulators, and environmental groups, necessitating research to identify areas for improvement (Ogunode & Adegbe, 2022). Despite growing global awareness of environmental concerns, there remains a significant lack of comprehensive information regarding the extent and quality of environmental disclosures made by Nigerian companies. The current environmental challenges facing Nigeria, such as climate change, pollution, and deforestation, have made CED even more important. These challenges require a concerted effort from all stakeholders, including businesses.

This present study was motivated by the commonly-held notion that publicly traded companies in developing countries do not adhere to environmental reporting regulations due to a lack of legal obligation, and that the majority of Nigerian research on environmental reporting focuses on oil and gas companies rather than manufacturing firms. For this reason, the study examines the effect of corporate environmental disclosure on financial performance of selected listed manufacturing firms in Nigeria. The specific objectives are to; investigate the effect of corporate disclosure and industry type, firm Leverage and firm size on the Return on Asset (ROA) of listed Manufacturing firms in Nigeria. The study covers all listed ten (10) manufacturing companies of the Nigerian Exchange Group (NGX) as of December 2022 these firms include firms in consumer goods, industrial, and construction.

2. Literature Review

2.1 Conceptual Review

2.1.1 Corporate Environmental Disclosure Determinants

Corporate environmental disclosure refers to the process of companies releasing information about their environmental performance, practices, and impacts to stakeholders, such as investors, customers, employees, and the general public. This information includes environmental policies and goals, greenhouse gas emissions and climate change strategies, water and energy usage and others, companies share information about their environmental impact and challenges with stakeholders and consumers through a process known as environmental disclosure (Angela & Handoyo 2021). Disclosure of a company's environmental activity that is mandated by law is known as mandatory environmental disclosure, whereas voluntary environmental reporting refers to the voluntary publication of a company's environmental data.

According to Ortiz-Martinez and Crowther (2016), the primary objective of environmental disclosure is to identify and report environmental risks and impacts that are not typically captured by traditional accounting practices, thereby providing stakeholders with comprehensive information to inform their decision-making processes. The activities of businesses, particularly those in the oil and gas, banking, and manufacturing sectors, have a negative impact on the environment. These consequences include noise pollution, waste,

hazardous emissions, spills, and degradation (Parmigiani et al. 2015).

2.2.1.1 Industry Type

The industry type of a corporation refers to the specific industry to which it belongs. Companies in Nigeria are grouped into many industries such as banking, manufacturing, oil and gas, service, agricultural, and continuing in this manner. Some of these industries' operations in the environment are harmful to humans due to their effects such as pollution and waste. According to Welbeck et al (2017), industry type can be classified into environmentally sensitive and non-sensitive sectors. The former group comprises businesses whose operations have a direct impact on the environment. According to a number of studies (Hackston & Milne, 1996; Deegan & Gordon, 1996; Moneva & Llena, 1996; Campbell, 2003; Cho & Patten, 2007; Brammer & Pavelin, 2008), businesses in environmentally sensitive industries are generally thought to disclose more environmental information than businesses in non-sensitive industries.

2.2.1.2 Financial Leverage

The practice of funding business operations, such as the acquisition of non-current assets, with borrowed money (debt capital) rather than equity share capital is known as financial leverage. The degree to which businesses rely on creditors (debt capital) to finance their operations is known as financial leverage (Angela & Handoyo, 2021). A highly geared company (leverage) depends heavily on outside funding, whereas a lowly geared company uses more equity stock capital than debt to fund its operations. A company's level of leverage determines how exposed it is to financial risk (Gantowati & Agustine, 2017). The cost of reporting environmental activities affects how well they are implemented; a highly geared company prioritizes servicing and repaying its external loan; as a result, funding is limited and environmental activities and disclosure are reduced for such companies (Hallgren & Johansson, 2016).

2.2.1.3 Firm Size

The ability of a business to include environmental information in its annual report may be impacted by firm size. Dibia and Onwuchekwu (2015) have observed a negative correlation between environmental disclosure and firm size. Additionally, a negative correlation between firm size and environmental disclosure was discovered by Gatimbu and Wabwine (2016). Environmental disclosure and corporate size have a considerable beneficial association, as reported by Nawaiseh (2015). Firm size and environmental disclosure were found to positively correlate in Burgwal and Vieira's (2014) study of the factors influencing environmental disclosure in Dutch-listed corporations. Because they are always optimistic about their future, big companies are frequently prepared to invest in voluntary information disclosure in order to set themselves apart from competitors and add value (Hasan & Hosain, 2015).

2.2 Financial Performance

Financial performance, according to Solomon (2020), relates to how well financial goals have been achieved. It gauges a company's overall financial health and how well it has performed financially over a specific time frame. A company's ability to create profit from its business operations is measured subjectively by its financial success (Okafor, 2018). Nonetheless, over time, financial performance is utilized to forecast a company's financial health. Several metrics, including Return on Capital Employed (ROCE), Return on Asset (ROA), Return on Equity (ROE), and Market Share Growth, can be used to quantify this

(Solomon, 2020). Verma (2019) argues that financial performance refers to how well financial goals have been carried out. It evaluates a company's overall financial health over time as well as the financial results of its activities and policies. It can also be applied to compare companies operating in the same industry, a different industry, or a mix of industries

2.3 Theoretical Review

2.3.1 Legitimacy Theory

Legitimacy theory, introduced by Dowling and Pfeffer in 1975, explains how organizations gain and maintain stakeholder support and approval by adhering to social norms and expectations. This theory is widely used to understand environmental reporting practices, as companies aim to demonstrate their commitment to social responsibility and manage their credibility. While legitimacy theory highlights the importance of meeting stakeholder expectations, it has been criticized for focusing too much on motivations and not enough on the processes and variations in environmental policies. Some scholars argue that the theory supports corporate social reporting policies that lack genuine accountability and transparency, and fails to capture the power dynamics that influence reporting standards. Despite these limitations, legitimacy theory remains a foundational framework for understanding the factors that drive companies to disclose environmental information.

2.4 Empirical Review

KPMG conducted an annual survey on sustainability reporting practices across over 5,000 companies globally, primarily to promote their environmental services. The 2023 survey revealed a significant increase in sustainability reporting, with 87% of companies reporting, up from 80% in the previous year. Additionally, companies are becoming more transparent about their environmental performance and impacts, with a notable rise in disclosures. Illelaboye and Alade (2022), looked into how family-owned businesses in Nigeria performed in relation to environmental accounting. As stand-ins for environmental accounting, the study uses expenditures associated with community growth, restoration, and health and security, the results showed that costs associated with community development had a negative and substantial effect on financial performance, whereas costs associated with restoration had a negative and minor effect and costs associated with health and safety had a negative and small impact.

Likewise, Igbekoyi et al. (2021) investigated the impact of environmental reporting on the financial performance and return on assets of selected Nigerian industrial companies. The study found a negligible negative impact of environmental reporting on financial performance and environmental sustainability reporting. However, a marginally significant positive correlation was discovered between return on assets and earnings per share, also the findings of Pedron et al.'s (2021), showed that environmental disclosure had a positive effect on stock prices and market values of listed companies in Brazil, align with the results of Igbekoyi et al.'s (2021) research, suggesting a consistent trend in the relationship between environmental disclosure and financial performance. Conversely, Ndukwe and Nwakanma's (2018) findings showed that environmental disclosures and the return on assets of the chosen enterprises under investigation had a negative and negligible relationship.

Emeka et al. (2020) investigated the implications and potential effects of environmental disclosure on return on assets and sustainability reporting of a subset of selected non-financial sector companies quoted in Nigeria, results showed that the chosen and sampled Nigerian companies' return on assets and corporate sustainability reporting were positively and significantly impacted by environmental disclosure as evaluated by

economic, social, and governance (ESG). The research by Emeka et al. (2020) aligns with the findings of Wara et al. (2020), showing that environmental disclosure had a positive impact on the profitability of the companies examined. However, this finding contradicts the earlier research by Qiu et al. (2014), which discovered a significant negative relationship between environmental disclosure and profitability, suggesting a divergent view on the impact of environmental disclosure on financial performance.

The impact of environmental disclosure on the corporate performance of companies listed on the Nairobi Stock Exchange floor was investigated by Wara et al. (2020). The study included financial leverage and firm size as control variables. Based on Tobin's Q and return on assets (ROA), the study's findings showed that environmental disclosure indices had a favourable and significant impact on business performance. "The results of Wara et al. (2020) mirror those of Nguyen & Tran (2019), revealing a significant positive correlation between financial performance and environmental accounting disclosure through regression analysis. However, the findings of Chukwu and Timah's (2019) study, which showed a negative impact of environmental accounting on the price-earnings ratio of insurance companies, contradict those of Wara et al. (2020), suggesting a divergent view on the relationship between environmental accounting and financial performance."

Obida et al. (2019) examined the effect of environmental disclosure on return on assets and stock market returns in Nigeria, with a focus on how disclosure policies influence return volatility. The study found that environmental disclosure significantly reduced stock return volatility and improved ROA for listed Nigerian manufacturing companies. However, it also discovered that environmental disclosure had a negative impact on market returns, which could deter investors. These findings align with those of Akee et al. (2016), who reported a negative correlation between environmental disclosure and business performance in listed Vietnamese companies. In contrast, Adegbe et al. (2020) found that environmental accounting practices positively increased share value. Omoye and Oshilim (2018) investigated Nigeria's environmental disclosure's antecedents. Over a five-year period (2012-2016), it was discovered that there is a positive association between industry type and environmental disclosure.

2.5 Literature Gaps

The concept of corporate environmental disclosure is based on the authors' perceptions of corporate environmental disclosure, although it is referred to by a variety of names, including voluntary disclosure, environmental reporting, environmental accounting, and Triple Bottom Line disclosure. Some studies compare different nations, industries, or media outlets in order to gauge the volume of environmental disclosure from corporations; others concentrate on the calibre of information revealed, still others examine the connection between environmental disclosure and corporate environmental performance. Certain works examine how the market responds to environmental disclosure by corporations. This research builds on the work of previous scholars who examined the factors influencing environmental disclosures by corporations.

The majority of research carried out in Nigeria primarily relied on firm characteristics and corporate governance variables, such as profitability, company size, the type of auditors they work for, board size, ownership, and audit committee, to determine environmental disclosures. However, very few studies in Nigeria have employed industry type, financial leverage, and firm size together as drivers of corporate environmental disclosures, according to the depth of the literature search.

3. Methodology

This study used ex-post facto research design. Secondary method of data collection was employed to obtain data from the published annual report and financial statements statement of selected listed Manufacturing firms in Nigeria Exchange Group covering a period of eleven years (2012-2022). The population of the study consist of fifty-two manufacturing firms listed on the Nigeria Exchange Group specifically Consumer goods, industrial goods and healthcare. Judgmental sampling technique was used to arrive at the sample size for the study.

3.1 Measurement of Variables

The selection of variables considered in this study is in consonance with those of previous empirical studies on this topic.

Table 1: Measurement of variables

Variables	Description	Measurement	Source of the measurement
Financial Performance; Return on Assets	Dependent variable	Ratio of Profit After Tax To Total Asset	Aminu, (2021)
Independent variables			
Industry Type (IT)	Independent variable	Takes the value, if the company is environmentally sensitive, otherwise	Ohidoa et al.,(2016)
Financial Leverage (FL)	Independent variable	It is calculated by dividing total debt by total equity	Li and Wang (2023),
Firms Size (FS)	Independent variable	Total assets	Mueller and Schmalke(2021)

Source: Author's Compilation (2024)

4. Data Analysis and Discussion of Findings

This section includes the descriptive statistics of the variables, unit root testing and co-integration, panel data, fixed effect result, random result, fixed effect result, Hausman' test result and discussion of results.

4.1 Descriptive Statistics

Table 2: Descriptive Statistics

Statistics	ROA	IT	FL	FS
Mean	0.396192	0.577982	0.323876	0.982162
Median	0.371280	1.000000	0.324560	1.009533
Maximum	1.065620	1.000000	0.724160	1.093842
Minimum	0.007210	0.000000	0.000000	0.000000
Std. Dev.	0.256434	0.496163	0.149278	0.148952
Skewness	0.801967	-0.315791	0.052123	-4.676754
Kurtosis	3.130983	1.099724	2.658466	26.55958
Jarque-Bera	11.76183	18.21183	0.579122	2918.211
Probability	0.102792	0.210111	0.748592	0.769010
Sum	43.18494	63.00000	35.30249	107.0557
Sum Sq. Dev.	7.101914	26.58716	2.406677	2.396150
Observations	109	109	109	109

Source: Author's Computation (2024)

Table 2 shows the descriptive statistics for the selected manufacturing firms from

the period of 2012-2022. Among the variables analysed in the descriptive statistics were return on assets (ROA), industry type (IT), financial leverage (FL) and firm size (FS). From the result above, firms size (FS) had the highest mean value (98.2%); while the lowest value was financial leverage (FL) with a value of 32.4%. Hence, indicates that on the average level, firms size (FS) contributed highest value to return on assets (ROA); while, financial leverage (FL) contributed lowest value. The implication of such finding is that the higher total asset possession held by selected listed manufacturing firms contributed approximately 98.2% to financial performance of listed firm, which empower them to perform their respective environmental function; while, higher total debt to total equity lessens profitability and environmental function.

Also, similar trend was discovered from the median value, with both firms' size (FS) and industry type (IT) showing a high impact on return on assets (ROA). This suggests that, when listed manufacturing firms possess huge total asset, as well as, ensuring strict compliance with environmental corporate responsibility much return is realized from investments. In addition, the *Jarque-Bera* test statistics showed that return on assets (ROA), industry type (IT), financial leverage (FL) and firm size (FS) were normally distributed judging from their *p*-value that was greater than 0.05. This indicates that majority of the selected variables for the selected manufacturing firms of the period 2012-2022 were normally distributed.

4.2 Test of Variables

4.2.1 Preliminary Test

The study evaluated for the presence of a unit root in the variables and determined their integrating order in an effort to normalize the data from the unit root problem. A co-integration test was performed to determine the long-term linkages between the variables, if the dependent variable linked to the model was discovered to be integrated in the same order as the explanatory variables.

4.2.2 Unit-Root Test

In order to guarantee that the time series data were approximated in their stationary format, the study used the Levin, Lin & Chut, Im, Pesaran and Shin W-stat and ADF - Fisher Chi- unit root techniques. The main goal of these tests was to demonstrate that the unit root or non-stationary stochastic process null hypothesis was true. Their individual statistics values must be more negative than the crucial values at the 5% significant level in order to deny the presence of a unit root. The unit root hypothesis was rejected at the 5% level, as shown by the asterisk (**).

Table 3: Panel unit root test

Variables	Levin, Lin & Chu t*	Decision	Im, Pesaran and Shin W-stat	Decision	ADF - Fisher Chi-square	Decision
ROA	/2.23025/ (0.0129**)	I(0)	/3.29943/ (0.0005)	I(1)	/48.8579/ (0.0003)	I(1)
IT	/1.77708/ (0.0378**)	I(0)	/5.09640/ (0.0000**)	I(1)	/9.33125/ (0.0000**)	I(1)
FL	/4.00537/ (0.0000**)	I(0)	/2.44029/ (0.0455**)	I(0)	/31.8004/ (0.0455**)	I(0)
FS	/6.94555/ (0.0000**)	I(1)	/7.18523/ (0.0000**)	I(1)	/20.9991/ (0.0072**)	I(1)

**Stationary at 5% Critical Level (0.05): Probability Value

Source: Author's Computation (2024)

The results from Levin, Lin & Chut, Im, Pesaran and Shin W-stat and ADF - Fisher Chi-square in Table 4.2.2 show that return on assets (ROA), industry type (IT) and financial leverage (FL) were stationary at level using Levin, Lin & Chu t, test; while, financial leverage (FL) was stationary at level for Im, Pesaran and Shin W-stat and ADF - Fisher Chi-square. Also, return on assets (ROA), industry type (IT) and firms size were stationary at first level difference using Im, Pesaran and Shin W-stat and ADF - Fisher Chi-square; while, the same finding was obtained for firms size (FS). The result implies that these variables were integrated together in order zero and order one. Indicating that at level and first level difference each of the identified variables was not characterized with unit root problem; hence, established the assumption of absence of co-variance at level and first difference level.

4.2.3 Co-Integration Test

The study went on to use the Kao co-integration approach given the variables' proven unit root features. The result is given below in the above table Kao Residual Co-integration. The table shows the results of the Kao co-integration technique test for the selection of ten firms for 2012 to 2022. The *p*-value result was less than 5% level of significance; therefore, confirmed a long-term association between the variables. Hence, indicating a long-term connection between return on assets (ROA), industry type (IT), financial leverage (FL) and firms size (FS).

Table 4: Kao Residual Co-integration

	t-Statistic	Prob.
ADF	-0.208447	0.0074
Residual variance	0.046542	
HAC variance	0.024876	

Source: Author's Computation (2024)

4.2.4 Hausman Test Result

Hausman test can be used if under the null hypothesis one of the compared models gives consistent and efficient results and the other consistent, but inefficient, and at the same time under the alternative hypothesis the first model has to give inconsistent results and the second consistent (Teodora, 2014). Given this, the present study uses the Hausman' test result to choose the ideal estimated technique between fixed effect and random effect for the

preset study. The null and alternative hypotheses:

H_0 : The appropriate model is Random effects. As such, there is no correlation between the error term and the independent variables in the panel data model.

$$Cov(\alpha_i, x_{it}) = 0 \dots\dots\dots(i)$$

H_1 : The appropriate model is Fixed effects. Therefore, the correlation between the error term and the independent variables in the panel data model is statistically significant.

$$Cov(\alpha_i, x_{it}) \neq 0 \dots\dots\dots(ii)$$

The outcome of Hausman's test estimate, which was used to determine the best estimator for the variables between fixed and random effect estimate, is shown in the table 5 below. The outcome indicates that the Hausman's test probability value was greater than 0.05 ($p > 0.05$) levels of significance, indicating that the null hypothesis was accepted in place of the alternative hypothesis. In view of this, the present study will use the Random effect estimate to explain the result for the present study.

Table 5: Hausman Test

Test Summary	chi2(2)	Chi-Sq. d.f	Prob.
Cross-section random	2.451011	3	0.4842

Source: Author's Computation (2024)

4.3 Corporate Environmental Disclosure Determinants and Financial Performance

Table 6: Panel Pool Data (Dependent variable: ROA)

PANEL OLS				
Variable	Coefficient	Std. Err	t-Value	Prob.
IT	0.114109	0.047443	2.405182	0.0111**
FL	-0.672153	0.154624	-4.347012	0.0000**
FS	0.690733	0.170113	4.060439	0.0001**
Constant	0.297447	0.034061	8.732797	0.0000**
RANDOM-EFFECTS REGRESSION				
IT	0.096671	0.042329	2.283802	0.0051**
FL	-0.437623	0.201865	-2.167899	0.0324**
FS	0.429636	0.143931	2.985014	0.0333**
Constant	0.562242	0.170786	3.292095	0.0014**
FIXED-EFFECTS REGRESSION				
IT	0.079489	0.042438	1.983062	0.0835
FL	-0.262107	0.109180	-2.400690	0.0099**
FS	0.611395	0.145218	4.210187	0.0000**
Constant	0.481878	0.174882	2.755456	0.0070
R-squared	0.158580			
Adjusted R-squared	0.134539			
Prob(F-statistic)	0.000397			

** indicates significant 5% conventional level

Source: Author's Computation (2024)

Table 6 shows the panel OLS, random effect and fixed effect results for the selected manufacturing firms. As shown in the finding, it was confirmed that industry type (IT) was significant with a direct effect on return on assets (ROA) at 5% significant, judging from the Random-Effects Regression. Aside this, other estimate like Fixed-Effects Regression and Panel OLS confirmed the same finding that a positive relationship existed between return on

assets (ROA) and industry type (IT). This suggests that for every 1.0% consideration of environmentally sensitive by listed manufacturing firms, there is 9.7% increase in the rate of return of their respective investment (provided other factors are held constant).

Financial leverage (FL) proved significant with an indirect effect on return on assets (ROA) judging from *p*-value of the estimate that was less than 5% conventional significance level. Statistically, this finding shows that for every additional loan of 1.05 increase obtained by listed manufacturing either through external or domestic sources lessens their respective environmentally sensitive, as well as, return on asset. Also, with a *p*-value less than 5% firm size (FS) was statistically significant with a direct effect on return on assets (ROA). This shows that a positive and significant relationship did occur between return on asset (ROA) and firms size (FS). The implication of this is that increase in the firm size in terms of expenses and inventory stock directly influenced return on asset (ROA).

As shown in the estimated result in Table 6 industry type (IT) showed a negative sign and was significant at 5% conventional significant level. Therefore, the H_0 result was rejected; while the null form was accepted. Therefore, industry type has a significant impact on return on asset (ROA) of listed Manufacturing firms in Nigeria. It is proven that financial leverage (FL) was significant with an indirect effect on return on assets (ROA) judging from *p*-value that less than 5% conventional significance level. As such, leverage has a significant effect on the Return on Asset (ROA) of listed Manufacturing firms in Nigeria. Also, firms size (FS) was statistically significant with a direct effect on return on assets (ROA). Suggesting a direct link between firms' size (FS) and return on assets (ROA). Therefore, the H_0 result was rejected; while the alternative form was accepted.

4.4 Discussion of Finding

It was established that industry type (IT) was significant with a direct effect on return on assets (ROA) at 5% significant judging from *p*-value. Statistically this implies that 1.0% increase in environmentally sensitive issue by listed manufacturing firms increase return on asset by 9.7%, provided other factors are held constant. This finding has two economic implications. First, when listed manufacturing firms comply strictly with environment rules and regulation through maintaining a sustainable environment, it creates a cordial relationship with host community, as well as, other stakeholders within the organization; therefore, increase production and revenue generation on investment.

Given this, Angela and Handoyo (2021) reveal that the basic need for environmental sensitive is to increase the understanding of stakeholders regarding the environmental impact of businesses' operations. Given this, studies like Wara et al. (2020) and Emeka et al. (2020) in their respective studies discovered a positive and significant link between environmentally sensitive and return on asset; while, on the contrary, Ilelaboye and Alade (2022) and Igbekoyi et al. (2021) discovered a negative and significant relationship between them. The disparity in findings may be attributed to methodology, years of studies and other factors.

It was confirmed that financial leverage proved significant with an indirect effect on return on assets (ROA) judging from *p*-value of the estimate that was less than 5% conventional significance level. Statistically, this finding shows that for every additional loan of 1.0% increase obtained by listed manufacturing either through external or domestic lessens their respective environmentally sensitive, as well as, return on asset. The implication of such finding is that excessive loan reduces the rate at which organization like listed manufacturing firms comply with maintaining sustainable environment; therefore, worsens the rate of investors that may want to purchase organisation's stock, as well as, return on asset. Given this, Obida et al. (2019) and Omoye and Oshilim (2018) arrived at a similar finding with a conclusion that excessive financial leverage worsens organisations'

profit

It was also confirmed that firm size (FS) was significant with a direct effect on return on assets (ROA). This shows that a positive and significant relationship did occur between return on asset (ROA) and firm size (FS). The economic implication of this is that expansion of the organization through increase in ownership structure, accessibility to funds, as well as, increase in higher assets than liability boosts return on the rate of organisations' asset. On this note, Igbekoyi et al. (2021) and Ezeagba, Rachael, and Chiamaka (2017) arrived at a similar finding from their respective studies that a direct link did occur between them.

5. Conclusion and Recommendations

The study examined the current state of environmental disclosure in Nigerian listed firms. As such, findings showed that industry type (IT) and firm size (FS) proved significant and directly related to return on assets (ROA); while, financial leverage was significant also but indirectly related to return on assets (ROA). Hence, the study concluded that adhere to environmental disclosure by listed manufacturing firm through lessening environmental impacts caused by manufacturing activities promotes return on assets, as well as, firms size; while, excessive debt worsens it. The study recommended that, since industry types and firm size was significant with a direct effect on return on assets at 5% significant level, listed manufacturing firms should comply strictly with environment rules and regulation through maintaining a sustainable environment.

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