Academy Journal of Multidisciplinary Doctoral Research [AJMDR]
Volume 2, Issue 1, 2024 ISSN: 2992-4669 || eISSN: 1116-3321

Effect of Firm Characteristics on Sustainability Reporting of Listed Industrial Goods Firms in Nigeria

Yisa Usman*

Department of Accounting, Nigerian Defence Academy, Kaduna, Nigeria

Corresponding Author's Email: topusman@gmail.com
Received: 13-05-24
Accepted: 13-07-24
Published: 17-08-24

Abstract

With firm size, board size, and profitability serving as proxies of firm characteristics, this study examined the effect of firm characteristics on the sustainability reporting of listed industrial goods firms in Nigeria with a sample size of 13 listed industrial goods firms in Nigeria. By applying panel regression techniques, the study shows that firm size (z-value of 2.25, p-value of 0.024) and board size (z-value of 1.98, p-value of 0.048) have a significant positive effect on the sustainability reporting of listed industrial goods firms in Nigeria. In contrast, profitability (z-value of -0.43, p-value of 0.665) has an insignificant negative impact. The study concluded that an increase in firm size and board size will increase corporate sustainability reporting disclosure for industrial goods firms in Nigeria. However, an increase in profitability will reduce the level of corporate sustainability reporting of industrial goods firms in Nigeria, which implies that the level of profitability is not a crucial factor in decisions that relate to corporate sustainability disclosure. The study recommends that listed industrial goods firms in Nigeria should improve their net assets so as to enhance their sustainability disclosure. The management of listed industrial goods firms in Nigeria is also encouraged to have large board members with diverse experience, especially in business finance, to enhance their level of sustainability reporting disclosure.

Keywords: Firm Size, Board Size, Profitability, Sustainability Reporting

1.0 Introduction

Sustainability reporting is increasingly attracting global attention in the business sector. Chikwendu et al. (2019) noted that sustainability reporting has become a strategic agenda for businesses in many countries, such that companies in developed countries have started to disclose information on the environment, community involvement, and professional development of employees, among other related sustainability disclosures, in annual financial reports. According to Herremans et al. (2016), the concept of sustainability was developed in response to stakeholders' demands. The board of a company reports yearly on the nature and scope of its sustainability practices as required under paragraph 28.3 of the Security and Exchange Commission (SEC) Code issued in 2011. The most commonly accepted sustainability disclosure standard is the Global Reporting Initiative (GRI), which is acknowledged by the Triple Bottom Line reporting idea. The guideline calls for disclosures on economic, environmental, and social (EES) issues, often known as the Triple P (profit, planet, and people).

Sustainability reporting is the publication of a company's performance and its effects on the EES, encompassing both quantitative and qualitative data (GRI, 2011; KPMG International, 2011). It offers more details on the impact of a company's EES activities and its detailed documentation while considering both non-financial and financial elements (Mock et al. 2007, 2013). According to Mion and Adaui (2020), sustainability reporting informs stakeholders about the social, economic, and environmental effects of a company's operations. According to Sethi et al. (2017), sustainability reporting is a way to show good governance and transparency. Adhipradana (2014) asserts that the disclosure of sustainability reports is gaining ground in international business practices and improving performance. A sustainability report enhances corporate legitimacy and helps investors measure a company's performance beyond its financial report. Companies that want to advance their interests in society should publish their sustainability activities. Sustainability reports are an essential component of the communication process between corporate organisations and their stakeholders (Sawani et al. 2010).

Board size is the number of directors on the board of a company. Esa and Mohd-Ghazali (2012) document a significant positive relationship between the extent of sustainability reporting and board size. As noted by Bekhir (2009), larger board sizes would lead to a broader exchange of ideas and experiences and can motivate companies to undertake corporate sustainability reporting activities, especially in times of crisis and regulatory changes. Widianto (2011) noted that a company's size has a positive influence on its sustainability reporting. The study by Idah (2013) revealed that board size has a significant impact on sustainability reporting. Majeed et al. (2015) found that the level of sustainability disclosure is high in companies with larger boards. Rao et al. (2012) suggest that board size can increase sustainability reporting. Shamil and Krishnan (2014) asserted that large companies have large boards, and such companies want to increase their sustainability reporting. Sanders and Carpenter (1998) endorsed the idea that a company's degree of internationalisation influences the size of its board, which lessens its reliance on the environment. Dalton et al.'s (2017) meta-analyses also show a favourable correlation between board size and company financial performance.

Firm size is the totality of a firm's assets, measured as the natural logarithm of the assets (Arun et al., 2015). It is a quantifiable measure of a company's operation that is determined by several factors, such as asset value, employment numbers, total sales, or business volume. A company can fall into one of three sizes: large, medium, or small. Because large organisations are capable of consistently enhancing their company performance and constantly seeking to boost earnings quality, investors have greater faith in these companies (Tangngisalu et al., 2020). Large companies use their size to increase efficiency, expand their reach, and take advantage of economies of scale. Simnett et al. (2009) indicate that large companies were more likely to produce sustainability reports. Larger companies disclose more information in their sustainability reports to portray their corporate citizenship and legitimise their existence (Mohd-Ghazali, 2007). However, as businesses gain prominence, they may experience inefficiencies, which may affect their financial performance (Nelson and Oluoch, 2019).

Ahmad (2014) argues that a more prominent company will spend more to realise its legitimacy because the company is likely to disclose information more widely, including sustainability reports, thereby creating a social value alignment of its activities with the expectations of society. Gamerschlag et al. (2011) maintain that larger companies disclose higher levels of public information readily to ease the costs associated with information asymmetry. In the view of Akbas (2014), an increase in the size of a firm makes it more visible, which causes stakeholders' demands for social and environmental responsibilities.

Profitability is the excess income over expenses incurred in a business. According to Herremans et al. (1993), as referenced by Loh et al. (2017), profitability influences companies' social consciousness, which results in more stable performance and lower overall risk. A company's market value is connected with sustainability reporting (Loh et al., 2017). Strong economic performance is associated with higher publication of environmental information (Cortez 2011), and companies that use sustainable reporting standards have better cash flows from operations and profit

before taxes (Ameer and Othman 2012). Sustainability reporting increases the credibility of a business since it helps investors make decisions that are more efficient and have lower risk, potentially resulting in better firm value. It can also be used to assess its performance (Windolph et al., 2014).

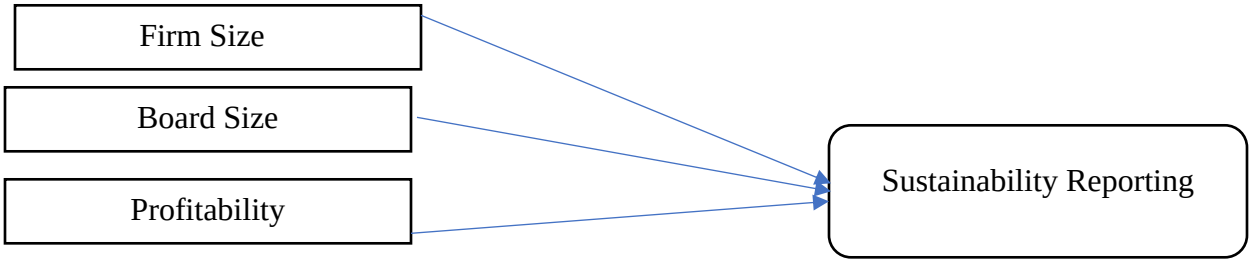
The main objective of this study is to assess the effect of firm characteristics on the sustainability reporting of listed industrial goods firms in Nigeria. The specific objectives of this study are to evaluate the effect of firm size on the sustainability reporting of listed industrial goods firms in Nigeria; to evaluate the effect of board size on the sustainability reporting of listed industrial goods firms in Nigeria; and to evaluate the effect of profitability on the sustainability reporting of listed industrial goods firms in Nigeria. The study will benefit finance managers and policymakers as a guide in developing an appropriate sustainability reporting policy framework for businesses on how to reduce harm to the environment; stakeholders on how companies should be positively affecting the environment; the general public on how well companies have been reporting their sustainability activities; and the academic community as a valuable addition to existing literature in the field of firm characteristics and sustainability reporting. Investors can also use it to decide whether to invest in companies whose performance can be determined based on their social and environmental contributions, in addition to their financial performance.

To the best of the researcher's knowledge, studies on the effect of firm characteristics on sustainability reporting of listed industrial goods firms lack sufficient examination in Nigeria, which necessitates this study with the use of the panel regression technique.

2.0 Literature Review

2.1.1 Conceptual Framework

The framework of this study comprises firm characteristics represented by firm size (FSZ), board size (BRDSZ), profitability (PROF), and sustainability reporting (SRT).



Source: Researcher's Construct (2024)

2.1.2 Firm Characteristics

According to Zou and Stan (1998), firm characteristics are managerial and demographic variables, which together make up a portion of the internal environment of the firm. These include business size, leverage, liquidity, sales growth, asset growth, and turnover (Kogan and Tian 2012). The other characteristics include the company's ownership structure, board members, age, dividend payout, profitability, access to financial markets, and expansion potential (McKnight & Weir, 2008; Subrahmanyam & Titman, 2001). Firm characteristics also cover a wide range of business traits, such as the company's financial performance, the industry it belongs to, and the effective tax rate. Firm characteristics include both internal and external traits that have an impact on sustainability reporting.

The natural logarithm of the total assets serves as a proxy for firm size, which is related to corporate entity size. It is crucial to sustainability reporting because the size of the board that oversees the

company's planning activities depends on the size of the firm. Salamon and Siegfried (1977), cited in Ogundajo and Onakoya (2016), asserted that large companies will have large boards of directors with a variety of experience, political connections, and knowledge that will enable them to take the proper social responsibility initiatives and disclose them through sustainability reports. Board size describes the number of directors appointed to a company's board of directors. A board with experienced non-executive directors will ensure sound and standard sustainability reporting. A company's performance will determine its commitment to repairing the environmental harm caused by its operations. It will also determine if it is willing to engage in sustainability reporting.

The disclosure of sustainability reports is increasingly gaining attention in global business practices. It guides investors with interests in companies that address social and environmental issues in addition to financial performance.

2.1.3 Sustainability Reporting

According to Spence and Grey (2007), sustainability reporting is how organisations inform stakeholder groups within society and the general public about the social and environmental effects of their economic actions. They also viewed it as a way to ensure the legitimacy of organisations, a tool to manage stakeholder relationships, or a process to create favourable impressions. Loh et al. (2017) see sustainability reporting as the disclosure of non-financial information that covers governance, economic, social, and environmental factors. The terms "sustainability reporting" and "triple bottom line (TBL) reporting" are used interchangeably (Joseph 2014). The Global Reporting Initiative (GRI) (2013) defines sustainability reporting as measuring, revealing, and holding an organisation's stakeholders accountable. According to Simnett (2012), the number of businesses that publish sustainability reports has significantly increased due to the push for corporate behavioural transparency and accountability. Managers are encouraged to disclose sustainability reports due to severe regulations that mandate businesses to engage in social and environmental responsibilities (Sari & Marsono, 2013).

Wang (2017) noted that environmental and social factors are both included in sustainability reporting. These factors include raw materials, energy, water, biodiversity, air, suppliers, products, services, labour practices, customer health and safety, respect for privacy, public policy competition, pricing, and corporate citizenship. Shah (2014) underscored the need for the preservation and conservation of the environment due to the bio-diversification of the planet, which includes a variety of plants, animals, and microorganisms. He noted that there has been a marked increase in the number of businesses that publish sustainability reports. Adams (2004) argued that sustainability reporting is vulnerable to questions about the accuracy and reliability of the data because most companies only share the information necessary to advance their interests and build a positive reputation rather than aiming for transparency and stakeholder accountability.

2.2 Theoretical Framework

This study is underpinned by agency theory. The theory explains the relationships between managers and stakeholders (Hussain et al., 2016). Managers, acting in self-interest, have access to more knowledge about present and future performance than stakeholders (Ho & Taylor, 2013). Companies share value-relevant information with various interested parties to decrease information asymmetries (Brammer & Pavelin, 2008), which enables all stakeholders to make good decisions by providing them with the same knowledge and conditions (Martnez-Ferrero et al., 2013). With agency theory, Akhtaruddin et al. (2009) asserted that businesses should increase voluntary disclosures to avoid regulatory pressure. From the standpoint of agency theory, businesses voluntarily release sustainability reports to address information asymmetries, cut down on agency costs, and minimise pressure from outside agents.

Legitimacy theory and stakeholder theory are other theories that inspire sustainability reporting. According to legitimacy theory, an organisation is viewed as a social compact that links public expectations with commercial interests (Martnez-Ferrero et al. 2013). This theory contends that organisations can only survive with external stakeholders' endorsement of their actions (Rossi & Tarquinio, 2017). Momin and Parker (2013) noted that the primary justification for linking legitimacy

theory and corporate sustainability disclosures is the response to societal expectations or environmental developments. In this regard, businesses offer sustainability reports to support their business endeavours (Ching & Gerab, 2017). The stakeholder theory emphasises a company's ties with its stakeholders, beyond just its shareholders. The corporation's stakeholders include employees, communities, investors, suppliers, and customers. An organisation uses corporate social reporting to align its operations with stakeholder expectations (Barako & Brown, 2008). By proving the organisations' adherence to ethical business practices, communication of corporate sustainability activities offers an opportunity to uphold positive stakeholder relationships (Jain & Winner, 2016), and it is a way to address strong demand from stakeholders (Al Farooque & Ahulu, 2017; Odriozola & Baraibar-Diez, 2017). While stakeholder theory concentrates on specific social groups, including employees, shareholders, investors, customers, and non-governmental organisations, legitimacy theory presupposes societal expectations.

The size of a corporation depends on the worth of its total assets, either measured as such or by the natural logarithm of the entire assets. To demonstrate their corporate citizenship and validate their existence, more giant corporations can reveal more information in their sustainability reports (Mohd-Ghazali, 2007). According to Hahn and Kühnen (2013), boards of directors often play a crucial role in determining a company's sustainability reporting strategy because large corporations typically reveal their corporate sustainability reporting as a corporate strategy. Larger companies tend to disclose sustainability information more frequently and comprehensively (Sikand et al., 2014). Joseph (2010) emphasises that size is a coercive pressure that influences firms' involvement in sustainability reporting because stakeholders provide the resources that allow a company to operate profitably. As a result, larger companies have a greater responsibility to impact society and, as a result, disclose more sustainability information. Mapparessa et al. (2017) noted that large companies have significant resources to finance information, including sustainability disclosure. They said further that a small company that lacks the same resources as a large company needs to incur a more significant additional cost to be able to disclose information thoroughly.

According to Ahmad (2014), a larger company will require more investment to establish its legitimacy since it is more likely to share information broadly, including sustainability reports. Gamerschlag et al. (2011) noted that larger organisations reveal higher quantities of public information to reduce the costs related to information asymmetry. More prominent companies disclose more sustainability information to meet the growing needs of stakeholders and legitimise their company's activities further. As noted by Haniffa and Cooke (2005), corporations are more likely to use a formal channel to convey their corporate sustainability initiatives and enhance their corporate image and legitimacy due to greater public visibility, in alignment with the view of Akbas (2014) that growing a company's size increases its visibility, which piques stakeholders' attention and leads to demands for social and environmental responsibility.

Sustainability reporting and board size have a substantial positive association (Esa and Mohd-Ghazali's 2012). A large board size will allow for greater exchange of ideas, which inspires businesses to engage in corporate sustainability reporting initiatives, particularly during times of crisis and legislative changes (Bekhir, 2009). Widianto (2011) found that the size of the company has a favourable influence on sustainability disclosure. Luthfia (2012) also noted that a company's board size significantly affects its disclosure of sustainability information. In contrast, however, Giannarakis (2014) reported that board size has little bearing on sustainability disclosure. Idah (2013) also reported that board size has a significant impact on the sustainability report. Majeed et al. (2015) asserted that companies with larger boards have a high level of sustainability reporting. Board size raises the standard of sustainability reporting (Rao et al., 2012), and it is noted that large boards have more influence over sustainability-related decisions (Janggu et al., 2014).

Profitability is a company's ability to make new resources from day-to-day operations (Poundel,

2012) and is used to measure a firm's overall financial health over a given time period. It is the difference between a business's income and its outgoing costs. According to Rohmah (2015), profitability has a favourable impact on the disclosure of sustainability reports. According to Cortez (2011), firms with strong economic performance publish more information about environmental reporting. Large manufacturing companies with better reputations for social responsibility outperformed companies with poorer reputations. Ameer and Othman (2012) observed a significant rise in profits and cash flows from operations in companies that engaged in sustainable reporting practices. According to Cormier et al. (2005), the credibility of a company's profitability is increased by sustainability reporting since it enables investors to make decisions with lower risk and greater efficiency, which may imply a higher firm value. Haniffa and Cooke (2005) noted in their findings that profitable businesses are better positioned financially to report socially responsible activity than less successful businesses that experience losses.

3.0 Empirical Review

Hardi et al. (2023) studied the impact of three sustainability reporting indicators on firm value, as well as the role of firm size and leverage. The indicators were sustainability reporting disclosure, sustainability reporting index, and sustainability reporting score. The study sampled 200 companies listed on the Indonesia Stock Exchange (IDX) from 2013 to 2021. The study used the panel data regression technique to analyse the data and found that the sustainability reporting index exerts a positive impact on firm value. In contrast, the sustainability reporting score has a negative impact on firm value. The path analysis estimations in the study revealed that sustainability reporting mediates the positive relationship between firm size and firm value. The findings underscore the pivotal role of sustainability reporting in shaping a firm's value. These insights are valuable for businesses and investors seeking to understand the financial implications associated with sustainability reporting.

Adebayo et al. (2023) studied the influence of board size and board composition on the voluntary disclosure of quoted manufacturing firms in Nigeria from 2015–2019, with 33 firms as the sample size. The study obtained the needed information from the content analysis of annual reports and adopted a panel fixed effect model, a correlation matrix, and descriptive statistics in the estimation. The findings showed that board size and board composition have a positive and significant relationship with the level of voluntary disclosure and thus recommend a board's composition that includes professionals.

Shinta et al. (2023) studied the effect of audit quality, institutional ownership, profitability, and firm size on sustainability reporting assurance. The study used an explanatory quantitative method to analyse 42 data points from companies listed on the SRI-KEHATI index in 2019–2021. The study used the purposive sampling method and multiple linear regression. The result showed that profitability and firm size have a significant positive effect on sustainability reporting assurance.

Hanen et al. (2020) investigated the effects of board characteristics on the environmental, ethical, and governance disclosure of French-listed firms using a sample of 82 companies listed in the French SBF120 between 2012 and 2017. Board meetings, gender diversity, CEO duality, board size, and board independence were among the explanatory variables. Panel regressions were used with an extended least squares econometric technique. The study results revealed that environmental disclosure significantly and favourably correlates with board size.

Sonia & Khafid (2020) studied the role of profitability in mediating the effect of liquidity, leverage, and company size on sustainability report disclosure. The population consisted of non-financial companies listed on the Indonesia Stock Exchange (IDX) in 2015–2017 from 465 companies. The sampling technique used was the purposive sampling method, which produced a sample of 25 companies with 75 units of analysis. The study used path analysis with IBM SPSS 21 software to analyse the data. The result showed that liquidity and leverage have a negatively

significant impact on sustainability report disclosure. Liquidity and leverage have a positive and significant impact on profitability. Profitability mediates the indirect effect of liquidity and leverage on sustainability disclosure.

Antara et al. (2020) studied the effect of company size, leverage, and environmental performance on sustainability reporting. The study sampled eight companies listed in the LQ45 index, a stock market index for the Indonesia Stock Exchange, using the annual reports and sustainability reports for 2015–2018. The multiple linear regression technique was used to analyse the data. It was found that company size and environmental performance had a positively significant effect on sustainability reporting. In contrast, the leverage variable does not directly influence sustainability reporting.

Abdulsalam and Babangida (2020) studied the effect of sales and firm size on the sustainability reporting practices of oil and gas companies in Nigeria for 2004–2018. The study population comprises 24 oil and gas firms in the Nigerian oil and gas sector. The sample size was six companies, and data was obtained from the annual accounts of the sampled companies. The study used the panel regression technique to analyse the data. The study revealed that firm characteristics (sales growth and leverage) exert a negative significant effect on sustainability reporting and profitability of oil and gas companies in Nigeria, whereas firm size exerts a positive significant effect on sustainability reporting and profitability of oil and gas companies in Nigeria.

Muhammad Chamo (2020) examined the impact of firm-specific attributes on the sustainability reporting practices of industrial goods firms listed on the floor of the Nigerian Exchange with a study population of 11 companies for 2010–2018. The study used the panel regression technique to analyse the secondary data that was obtained from the annual reports of the companies. The study found a significant positive relationship between sustainability reporting and firm characteristics. The findings indicate that firm size and firm financial performance have a significant statistically negative impact on sustainability reporting. In contrast, leverage had a significant positive impact on sustainability reporting during the period.

The empirical study of Dilling (2010) aimed to determine if there are significant differences with regard to size, financial performance, capital structure, and corporate governance between firms that publish a G3 sustainability report and those that do not. The empirical study investigates whether the better-performing and/or governed corporations prepare their sustainability reports according to the G3 guidelines. The study analysed the quantitative and qualitative variables of 124 randomly selected G3 reporting and non-G3 reporting corporations. The results of the analysis show that corporations with the characteristics of being located in Europe and/or active in the energy or production sector and/or with a higher profit margin are more inclined to produce high-quality sustainability reports. In contrast, companies with a higher long-term growth rate are less inclined to produce sustainability reports. The results contribute to the knowledge of corporations providing voluntary information in the form of quality sustainability reports and the importance of the development of globally accepted sustainability reporting standards.

Lucia and Panggabeam (2018) analysed the effect of a company's characteristics (profitability, leverage, liquidity, and company size) and corporate governance proxied by the board of directors and audit committee on the disclosure of sustainability reports. The study had 105 samples of manufacturing companies listed on the Indonesia Stock Exchange and 262 manufacturing companies listed on the Malaysian Stock Exchange in 2013–2015. The study used the regression logistic method with E-Views version 9 to analyse the data. The results show that leverage, liquidity, and directors do not have a significant effect on sustainability reporting. In

contrast, profitability and company size have a significant influence on the sustainability report disclosure of manufacturing companies listed on the Indonesian Stock Exchange and Malaysian Stock Exchange.

Diantimala (2018) examined the effect of financial performance on sustainability disclosure and the effect of sustainability disclosure on firm value, with sustainability disclosure as a mediating variable. To accomplish the mediating effect, the study investigated the indirect effect of financial performance on firm value. The study predicted that lower leverage, higher firm size, higher liquidity, and higher profitability will motivate companies' management to focus on more sustainability disclosure, which should increase firm value. The sample size of the study was the companies listed on the Jakarta Islamic Index in 2013–2015. The study used path analysis to examine the hypothesis. The results revealed that higher liquidity emboldens management to convey more sustainability disclosure. Higher sustainability disclosures increase firm value significantly. However, the effect of leverage, profitability, and firm size is not significant. The results on the indirect effect of financial performance on firm value show that leverage and profitability have a positive indirect effect on firm value. In contrast, size and liquidity have no indirect effect on firm value. The implication of the study is that an increase in leverage and profitability will encourage management to publish more sustainability disclosures. It will also increase the firm value of companies listed on the Jakarta Islamic Index.

Aman and Bakar (2018) examined the influence of board characteristics on the sustainability reporting of publicly listed companies in Malaysia. The sample of the study consists of 260 companies listed on the Main Board of Bursa Malaysia. They used the linear regression technique to analyse the data of the sampled companies. The results show a significant positive association between board size, women on board, board independence, family on board, and sustainability reporting. Company size also has a significant positive association with sustainability reporting. In contrast, the results indicate that there is no significant influence between CEO duality, profitability, leverage, and sustainability reporting among publicly listed firms in Malaysia.

Haladu and Salim (2017) studied sustainability reporting by firms in the Nigerian economy by comparing the environmental and social categories of sustainability disclosure. The study was guided by the G4 sustainability reporting guidelines. The study used the Stata 13SE analytical tool to analyse environmentally sensitive companies in the Nigerian economy in 2009–2014. The study also made separate assessments and comparisons between environmental reporting and social reporting on the impact, influence, and significance of their relationships. The study found that firms performed better on social reporting than on environmental reporting in terms of higher sustainability disclosure rates and significant relationships.

Onyinye and Amakor (2019) examined the impact of firm attributes (firm size, leverage, and profitability) on sustainability reporting in Nigeria. The study employs an ex-post causal research design on a sample size of 35 manufacturing companies selected and listed on the Nigerian Exchange. The study used secondary data from the annual reports of the companies quoted in 2011–2017. The study used generalised least squares and fractional regression techniques for estimation. The study revealed that firm size has a positive and significant impact on sustainability reporting. The study recommends the need for improved sustainability disclosures for companies in Nigeria.

4.0 Methodology

This data for this study, effect of firm characteristics on sustainability reporting of listed industrial goods firms in Nigeria, was obtained from the annual reports of listed industrial goods firms on the Nigerian Exchange and from the websites of the firms. The

population of the study is the 14 industrial goods firms listed on the Nigerian Exchange, with a sample of 13 industrial goods firms. The data was analysed with descriptive statistics and panel regression analysis techniques to check the distribution model of the series. The independent variable of the study, firm characteristics, is measured by firm size (FSZ), board size (BRDSZ), and profitability (PROF). In contrast, the dependent variable is sustainability reporting, measured by sustainability reporting (SRT).

The functional relationship between the variables for this study is adapted from the model work of Molla (2021), modified, and presented as follows:

SRT = f (FSZ + BRDSZ + PROF).

Econometrically, the above equation becomes:

$$\mathbf{SRT_{it} = \beta 0 + \beta_1 FSZ_{it} + \beta_2 BRDSZ_{it} + \beta_3 PROF_{it} + \mu_{it}}$$

Dependent Variable: SRT = sustainability reporting;
f = functional relationship.

Independent Variables: FSZ = firm size; BRDSZ = board size; PROF = profitability;
$\beta 0$ = intercept constant; $\beta 1$ = coefficient of firm size; $\beta 2$ = coefficient of board size;
$\beta 3$ = coefficient of profitability; μ= stochastic error term; i = firms, t = periods;

Table 1: Variables, Measurement and Justification

Variables	Acronym	Type	Measurement	Justification
Sustainability Reporting	CR	DV	1 if reported, 0 if not	Oyekale et al. (2002)
Board Size	BSZ	IV	No. of board members	Margined & Azhaar. (2013)
Firm Size	FMSZ	IV	Log. of total assets	Frıas-Aceituno et al. (2014)
Profitability	PROF	IV	Net income/Total assets	Elly H. E., et al. (2015)

Source: Author's Compilation, 2024

Sustainability Report provides non-financial information on a firm's responsiveness to its activities on economic, environmental, and social expectations, measured by dichotomous values of 1 and 0. Firm size is the logarithm of the total assets of the firms. Profitability is the excess income over expenses incurred by firms, measured by the ratio of net income to total assets.

Table 2: List of Selected Industrial Goods Firms

No.	Names of Company
1.	Austin Las & Company Plc
2.	Berger Paints Plc
3.	Beta Glass Plc
4.	Chemical and Allied Products (CAP) Plc
5.	Cement Company of Northern Nig. Plc
6.	Cutix Plc
7.	Dangote Cement Plc
8.	First Aluminium Nigeria Plc
9.	Greif Nigeria Plc

10.	Lafarge WAPCO Plc (West African Portland Cement)
11.	D. N. Meyer Plc (Hagemeyer Nigeria Limited)
12.	Portland Paint & Products Nigeria Plc
13.	Premier Paint Plc

Source: Nigerian Exchange Group

5.0 Empirical results and discussion

5.1 Descriptive Statistics

From Table 3 below, sustainability reporting (SRT) has a minimum value of 0 and maximum value of 1. The mean value of 0.0927419 falls within the gap, which indicates a good spread. The standard deviation of 0.2499344 is greater than the mean, indicating strong growth for the

period under review. The table also shows that firm size (FSIZE) has a minimum value of 5.225263 and a maximum value of 9.240887, with a mean value of 6.751465. The mean value falls within the gap, which also indicates a good spread. The standard deviation of 1.009769 is less than the mean, which implies that it had slow growth.

Table 3: Descriptive statistics of the entire data

Variable	OBRDSZ	Mean	Std. Dev.	Min.	Max.
SRT	124	0.0927419	0.2499344	0	1
FSIZE	140	6.751465	1.009769	5.225263	9.240887
BRDSZ	136	9.044118	3.192277	5	19
PROF	110	5.95345	1.095966	3.875177	8.478287

Source: Author's Computation from STATA Version 15 output

Board size (BRDSZ) has a minimum value of 5 and maximum value of 19. The mean value of 9.044118 falls within the gap, which indicates a good spread. Board size also has a standard deviation of 3.192277, less than the mean, which indicates slow growth for the period under review. Profitability (PROF) has a minimum value of 3.875177 and a maximum value of 8.478287. The mean value of 5.95345 is within the gap, which indicates a good spread within the period studied. The standard deviation of 1.095966 is less than the mean, which implies that it had slow growth.

5.2 Doornik Hansen Normality Test

Table 4 shows the results of the Doornik Hansen Normality Test. The table shows that the probability value is not normally distributed, an indication that one of the basic assumptions of the linear regression technique is violated but corrected with the robust regression technique as specified by Gujarati (2003).

Table 4: *Hansen method*

Variable	Chi2	Prob. Chi2

Doornik Hansen	108.716	0

Source: Author's Computation from STATA Version 15 output

5.3 Pearson Correlation

Table 5 shows the Pearson correlation matrix for the data set to show the extent of associations between the variables. The correlation matrix determines the degree of relationships between the proxies of an independent variable and the dependent variable and helps to detect if a multicollinearity problem exists in the model.

Table 5 ***Pearson Correlation Matrix***

Variable	SRT	FSIZE	BRDSZ	PROF
SRT	1			
FSIZE	0.6539	1		
BRDSZ	0.5604	0.6659	1	
PROF	0.6328	0.9426	0.5711	1

Source: Author's Computation from STATA Version 15 output

From Table 5, a 65% positive and moderate relationship between firm size (FSIZE) and sustainability reporting (SRT) of listed industrial goods firms in Nigeria is observed from the correlation coefficient of 0.6539. This is significant at 1% levels of significance. The results also show that there is an approximately 56% positive and moderate relationship between board size (BRDSZ) and sustainability reporting (SRT) of listed industrial goods firms in Nigeria, according to the correlation coefficient of 0.5604. This is also significant at the 1% level of significance. Furthermore, the table shows 63% positive and moderate relationships between profitability (PROF) and SRT of listed industrial goods firms in Nigeria from the correlation coefficient of 0.6328. This is equally significant at 1% levels of significance. Finally, the proxies of the independent variable themselves suggest a mild relationship, as all the coefficients are below the threshold of 0.80, as indicated by Gujarati (2003). The exception is the relationship between firm size (FSIZE) and profitability (PROF) of approximately 94%, which leads to a further test of the variance inflation factor to determine if the high relationship will result in inflation.

5.4 Variance Inflator Factor (VIF) Results

To confirm the absence of multicollinearity problems among the exogenous variables, a collinearity diagnostic test was observed. The values of the variance inflation factors (VIF) and the inverse variance inflation factors (I/VIF) portray no multicollinearity problem in the data as their values are less than 10 and 1, respectively (Gujarati, 2003), as presented in Table 6. This points to the fact that the variables are well selected and fitted into the same regression model because the multicollinearity problem is absent in the model, which is one of the requirements for regression analysis.

Table 6 Variance Inflator Factor (VIF)

Variable	VIF	I/VIF
BRDSZ	1.63	0.094040

FSIZE	1.36	0.106865
PROF	1.33	0.579053
Mean VIF	1.44	

Source: Author's Computation from STATA Version 15 output

5.5 Heteroskedasticity Test

The heteroskedasticity test was conducted to establish that the data for this study was robust for the model. The study revealed that the data is heteroskedastic; as such, the basic linear regression model is unreliable, and this is confirmed by the result in Table 7, which shows a chi2 value of 39.80 with a p-value of 0.0000. The test failed to satisfy the classical linear regression assumption of homoskedasticity (constant error variance).

Table 7: ***Heteroskedasticity test***

Type of test	Chi2	P-Value
Heteroscedasticity Test	39.8	0.0000

Source: Author's Computation from STATA Version 15 output

5.6 Hausman Specification Test

The data for this study is panel, which data can lead to clustered error and possibly correlated over time because each listed industrial goods firm may have its own entity-specific characteristics (unobserved heterogeneity). This may bias the outcome variable or even the explanatory variables. As such, there is a need to control that. The Hausman test was conducted and shows that the random effect model is more appropriate. This is confirmed by the Chi2 value of 3.41 with a p-value of 0.3326 in Table 8, which is not significant at all levels of significance.

Table 8 *Hausman Specification Test Result*

Chi2	3.41
Prob. Chi2	0.3326

Source: Author's Computation from STATA Version 15 output

5.7 Breusch-Pagan Lagrangian Multiplier Test

The Breusch-Pagan Lagrangian Multiplier test gives an insight into an actual test to be conducted between the Random Effect Model and Pooled Ordinary Least Square Regression. From the Breusch-Pagan Lagrangian Multiplier test, the chibar2 value of 177.42 and the probability of 0.00 in Table 9 suggest that REM is more appropriate than Pooled Ordinary Least Square.

Table 9 *Breusch-Pagan Lagrangian Multiplier test result*

Variable	Chibar2	P-Value
CSR	177.42	0.00

Source: Author's Computation from STATA Version 15 output

5.8 The Results of Robust Random Effect Regression Model

Table 10 shows a 51% variation of sustainability reporting (CSR), predicted by the combined

effect of firm size (FSIZE), board size (BRDSZ), and profitability (PROF). The implication is that the model of the study is fit and the independent variables are properly combined and used. The P-value of 0.000 signifies that the model is fit for the study.

Table 10 *Robust Random Effect Regression Model result*

Variable	Coefficients	z-value	Prob.
Cons.	-1.111358	-4.38	0.000
FSIZE	0.1433368	2.25	0.024
BRDSZ	0.0366445	1.98	0.048
PROF	-0.0170849	-0.43	0.665
R-sq overall	0.5107		
Wald chi2	34.61		
Prob. >chi2	0		

Source: Author's Computation from STATA Version 15 output

6.0 Conclusion and Recommendations

This study examined the effect of firm characteristics on the sustainability reporting of listed industrial goods firms in Nigeria. The study found that large industrial goods firms in Nigeria are more involved in sustainability reporting. The firms also have a low level of information asymmetry, which enhances the level of corporate disclosure. The management of listed industrial goods firms in Nigeria should have a large board of diverse backgrounds that will impact their sustainability reporting positively. Though profitability level may not be a key factor for sustainability disclosure in the short run, listed industrial goods firms in Nigeria should maintain increased returns as this ultimately determines their size. The factors remain critical to protecting stakeholders' interests in the firms' public disclosures of sustainability actions. This research is significant for policy improvement that will enhance performance and promote sustainability reporting for listed industrial goods firms in Nigeria. The findings are essential for accounting practitioners and financial policymakers.

References

Adams, C. A. (2004). The ethical, social and environmental reporting-performance portrayal gap. *Accounting, Auditing & Accountability Journal*, *17*(5), 731-757.

Adhipradana, F., & Daljono, D. (2014). Pengaruh kinerja keuangan, ukuran perusahaan, dan coporate governance terhadap pengungkapan sustainability report. Diponegoro Journal of Accounting, 3(1), 80-91.

Aman, Z., & Bakar, N. S. (2018). The influence of the board of directors' characteristics on corporate sustainability reporting by Malaysian public listed companies. *Journal of Humanities, Language, Culture and Business (HLCB)*, *2*(7), 41-55.

Barako, D. G., Hancock, P., & Izan, H. Y. (2006). Factors influencing voluntary corporate disclosure by Kenyan companies. *Corporate Governance: an international review*, *14*(2), 107-125.

Ching, H. Y., Ching, H. Y., Gerab, F. & Toste, T. H. (2017). The Quality of Sustainability Reports and Corporate Financial Performance: Evidence from Brazilian listed companies. *SAGE Open, 1*(1), 1–9.

Diantimala, Y. (2018). The mediating effect of sustainability disclosure on the relationship between financial performance and firm value. *Journal of Accounting, Finance and Auditing Studies 4(*2), 32-48.

Dilling, P. F. A. (2010). Sustainability reporting in a global context: What are the characteristics of corporations that provide high-quality sustainability reports? An empirical analysis. *International Business & Economics Research Journal, 9(1),* 19-30.

Haladu, A., & Beri, M. H. (2016). Corporate characteristics and sustainability reporting environmental agencies' moderating effects. *Journal of Humanities and Social Sciences, 21(8), 19-30*.

Haladu, A., & Salim, B. B. (2017). Sustainability reporting by firms in the Nigerian economy: Social versus environmental disclosure. *Journal of Accounting and Finance in Emerging Economies, 3*(2), 87-112.

Haladu, A., & Salim, B. B. (2016). Board characteristics and sustainability reporting: environmental agencies' moderating effects. *International Journal of Economics and Financial Issues, 6(4),* 1525-1533.

Herremans, I. M., Nazari, J. A., & Mahmoudian, F. (2016). Stakeholder relationships, engagement, and sustainability reporting. *Journal of business ethics, 138*, 417-435.

Joseph, C. (2014). Understanding sustainable development concept in Malaysia. *Social Responsibility Journal, 9*(3), 441-453.

Kolk, A., & Perego, P. (2010). Determinants of the Adoption of Sustainability Assurance Statements: An international investigation. *Business Strategy and the Environment*, *1(19),* 182-198.

Loh, L., Thomas, T., & Wang, Y. (2017). Sustainability reporting and firm value: Evidence from Singapore-listed companies. Sustainability, 9(11), 2112.

Lucia, L. & Panggabean, R. R. (2018). The effect of firm's characteristics and corporate governance to sustainability report disclosure. *ResearchGate*. *Social Economics and Ecology International Journal 2(1).*

Mapparessa, N., Bakry, M. I., Totanan, C., Mile, Y., & Arumsari, A. (2017). The effect of political visibility, company characteristics and gender diversity to sustainability report disclosure: Study of the company listed in Indonesia sustainability reporting award. *International Journal of Civil Engineering and Technology, 8*(9), 1019–1028.

McKnight, P.J., & Weir, C. (2008). Agency costs, corporate governance mechanisms and ownership structure in large UK publicly quoted companies: a panel data analysis. *The Quarterly Review of Economics and Finance, 49(2),* 139-158.

Miaad, M. A. (2020). Determinants of sustainability disclosure of Saudi listed companies.*Journal of Economics and Sustainable Development, 11*(2), 83-97.

Ndukwe, O. D., & Nwakanma, G. N. (2018). Sustainable development practices and corporate Financial performance: A survey of selected quoted companies in Nigeria. *Asian Journal of Economics, Business and Accounting, 7(1),* 1-13.

Ofe, I. I., & Ashinedu, A. E. (2019). Corporate governance attributes and social sustainability reporting. *International Journal of Accounting & Finance (IJAF), 8*(1), 21-37.

Onyinye, E. & Amakor, I. C. (2019). Firm attributes and sustainability reporting in Nigeria. *International Journal of Academic Accounting, Finance & Management Research, 3(6),* 36-44.

Perrini, F., & Tencati, A. (2006). Sustainability and stakeholder management: The need for new corporate performance evaluation and reporting systems. *Business Strategy and Environment,* 15(1), 296–308.

Freeman, R. E. (1984). Strategic management: A stakeholder approach *Cambridge University Press.*

Ruhana, A., & Hidayah, N. (2019). The effect of liquidity, firm size, and corporate governance toward sustainability report disclosures. Advances in Economics, Business and Management Research, 120(1), 279-284.

Sari, M. P., & Marsono, G. (2013). Pengaruh Kinerja Keuangan, Ukuran Perusahaan dan Corporate Governance terhadap Pengungkapan. Sustainability Report. *Diponegoro Journal of Accounting, 2(1),* 16-27.

Shah, A. (2014). Global Issues: Social, political, economic, and environmental issues that affect us all.

Simnett, R. (2012). Assurance of sustainability reports. Revision of ISAE 3000 and associated research opportunities. *Sustainability Accounting, Management and Policy Journal*, *3*(1), 89-98.

Spence, C., & Gray, R. (2007). Social and environmental reporting and the business case. *The Association of Chartered Certified Accountants (ACCA): London*.

Subrahmanyam, A., & Titman, S. (2001). Feedback from stock prices to cash flows. *The Journal of Finance*, *56*(6), 2389-2413.