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SOCIAL RESPONSIBILITY DISCLOSURE AND SUSTAINABLE DEVELOPMENT OF QUOTED INDUSTRIAL FIRMS IN NIGERIA

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ABSTRACT:

This study ascertained the relationship between social responsibility disclosure and sustainable development of quoted industrial firms in Nigeria. Fourteen (14) quoted industrial firms constituted the sample size of this study between 2011 and 2021. Ex-Post facto research design and content analysis were adopted while secondary data were extracted from the annual reports and accounts of the sampled firms and were analysed using E-Views 10.0 statistical software. The study employed descriptive statistics and inferential statistics using Pearson correlation and Binary Probit regression analysis. Three hypotheses were formulated and statistically tested at 5 per cent level of significance using regression analysis. Findings from the empirical analysis showed that a significant and positive relationship exists between environmental social responsibility disclosure and waste recycling ($\beta1 = 0.829307$; p-value = 0.0000<0.05); a significant and positive relationship exists between ethical social responsibility disclosure and waste recycling ($\beta2 = 0.746503$; p-value = 0.0000<0.05); a significant and positive relationship exists between philanthropic social responsibility disclosure and waste recycling ($\beta3 = 0.022601$; p-value = 0.0418<0.05) of quoted industrial goods firms in Nigeria at 5% level of significance. Consequently, this analysis supports growing evidence that social responsibility disclosure have a significant relationship and exerts significant influence on sustainable development at 5% significant level. The study further concludes that the components of social responsibility disclosure considered in this study are important variables in explaining sustainable development of quoted industrial firms in Nigeria. It was recommended inter alia that firms should be environmentally friendly to enable them gain competitive advantage, high liquidity and reduced environmental cost in the long run, thereby leading to a sustainable development.

1. INTRODUCTION

Corporate social responsibility is a growing issue in the business world along with increasing awareness that social responsibility is an integral part of business practice. Social responsibility (SR) also known as corporate social responsibility (CSR) pertains to people and organizations behaving and conducting business ethically and with sensitivity towards social, cultural, economic, and environmental issues. Companies which adopt the principles of social responsibility believe in operating ethically and responsibly because this gives them a greater chance of success than companies which do not adopt this principle. The increasing global interest and discourse on social responsibility has led to several changes in the way corporate organisations do business in the global market. Different strategies, tactics and policies are now employed. with respect to efficient facilitation and interaction among societal needs and the natural environment (Okafor, Egbunike & Amahalu, 2022). While many organisations are adopting a range of voluntary initiatives associated with improvement in working conditions, environmental performances and company relations with workers, consumers, local community, and other stakeholders, others continue to wrestle with the challenges of integrating economic, social and environmental expectations of their stakeholders into the overall business operations.

Social responsibility (SR) has to do with certain factors namely: employees, ethics, natural environment, and society, to form and compose an important part of the company`s responsible behavior, which can change the company reputation to a better level. Additionally, it can improve the confidence of investors, customers, shareholder, and stakeholder as a whole, and it can increase the employee's ability to work and spend more effort and dedication (Gil 2022). In recent days, corporations have started disclosing their economic, environment, employee's relation, community involvement, product, and other CSR related information in annual reports. Companies that are active in carrying out and reporting on their social responsibility activities experience sales growth and increases in stock prices and company value because the company is considered to be concerned with its social responsibility. These conditions motivate companies to compete actively to carry out and report on their social responsibility activities because they will increase company value in the eyes of stakeholders. The problem arises when companies that actively engage in social responsibility are also involved in financial scandals, such as Enron and Xerox which, before their financial scandal was revealed, were known as active companies and had received awards in the field of social responsibility. The same paradox also occurs in developing countries such as in Indonesia, with PT. Asian Agri and PT. Kaltim Prima Coal which are active and were extended

awards in disclosing social responsibility, but were involved in tax evasion scandals. The paradox shows that companies that actively carry out social responsibility disclosures are not necessarily companies that carry out ethical responsibilities in their business practices. The results of past research that associates social responsibility and financial performance provide inconclusive results. Research by Okudo and Amahalu (2023); Umurzakov, Tosheva and Salahodjaev (2022) showed a negative relationship, whereas research by Iftikhar, Justice and Audretsch (2022); Westin, Hallencreutz and Parmler, (2022) gave positive association results. Research conducted by Amahalu & Okudo (2023); Polcyn, Us, Lyulyov, Pimonenko and Kwilinski (2022) showed that there is no significant relationship between social responsibility and financial performance. The mixed findings of the reviewed empirical literatures created a lacuna which this study tends to close.

1.1 Objectives of the Study

The main objective of this study is to ascertain the relationship between social responsibility disclosure and sustainable development of quoted industrial goods firms in Nigeria.

The specific objectives are to:

i. Evaluate the relationship between environmental social responsibility disclosure and waste recycling of quoted industrial firms in Nigeria.
ii. Determine the relationship between ethical social responsibility disclosure and waste recycling of quoted industrial firms in Nigeria.
iii. Assess the relationship between philanthropic social responsibility disclosure and waste recycling of quoted industrial firms in Nigeria.

1.2 Hypotheses

Ho_1: There is no significant relationship between environmental social responsibility disclosure and waste recycling of quoted industrial firms in Nigeria.

Ho_2: There is no significant relationship between ethical social responsibility disclosure and waste recycling of quoted industrial firms in Nigeria.

Ho_3: There is no significant relationship between philanthropic social responsibility disclosure and waste recycling of quoted industrial firms in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual review

2.1.1 Social Responsibility Disclosure

Corporate social responsibility (CSR) disclosure is the information provided by corporations in association to their policies, aspirations, and activities toward community, customers, environment, and employees. CSR disclosure is the process of communicating the social and environmental impacts of the economic activities of the company on society, that means that a company that has good environmental and social performances will get positive responses from the investors through the increasing stock price (Mbonu & Amahalu, 2022). Gallardo-Vázquez, Barroso-Méndez, Pajuelo-Moreno and Sánchez-Meca (2019) posit that corporate social responsibility (CSR) reporting/disclosure refers to a company's systematic disclosure of information on its social performance.

2.1.2 Environmental Social Responsibility Disclosure

Environmental social responsibility disclosure is a form of corporate responsibility disclosure to the society as a result of activities which emerges negative impact on the environment hereby becoming accountable to fulfilling the information needs of the company for investors, shareholders, customers, and other parties. Modozie and Amahalu (2022) refer to environmental social responsibility disclosure as those disclosures that comprises of information relating to a corporation's activities, aspirations and public image with regard to environmental, community, employee and consumer issues. Corporate environmental social responsibility disclosures are those disclosures that relate to the impact, company activities have on the physical or natural environment in which they operate and are perceived to have several benefits that impel corporations to publicly report.

2.1.3Ethical Social Responsibility Disclosure

Ethical social responsibility disclosure is the process of communicating the social and ethical impacts of the economic activities of the company on society. Company that has good ethical and social performances will get positive responses from the investors through the increasing stock price. Moreover, ethical social responsibility includes adopting humane employee practices, caring for the environment, and engaging in philanthropic, social and environmental endeavors (Udo, Oraka & Amahalu, 2022).

2.1.4 Philanthropic Social Responsibility Disclosure

Philanthropic social responsibility can include things such as funding educational programs, supporting health initiatives, donating to causes, and supporting community beautification projects. Philanthropic social responsibility disclosure involves the disclosure of the donation of funds, goods, or services to another organization or cause. Philanthropic social responsibility disclosure is the process of communicating the philanthropic (donations of funds, goods, services and other things) impacts on the economic activities of the company in the society (Wekesa, 2022).

2.1.5 Sustainable Development

Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 2020).
Sustainable development is a broad term to describe policies, projects and investments that provide benefits today without sacrificing environmental, social and personal health in the future. These policies are often described as green because they focus on limiting the impact of development on the environment (Okafor, Egbunike & Amahalu, 2022). Sustainable development is a long term continuous development of society aimed at satisfaction of humanity's need at present and in the future via rational usage and replenishment of natural resources, and preserving the earth for future generations.

2.1.6 Waste Recycling

Waste recycling is defined as any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. Waste recycling, recovery and reprocessing are the collection of waste materials, their processing or manufacture into new products, and the purchase of those products, which may then themselves be recycled (Ang, Hsu, Tang & Wu, 2021).

2.1.7 Environmental Social Responsibility Disclosure and Sustainability Development

Sustainable development is one of the most critical problems in the development process in general, which also applies to companies. By publishing a sustainable report, it can help the company prove that the company has carried out social and environmental responsibilities.. Hence, the disclosure of a sustainable report becomes the company's effort to build trust and a positive image in the environment around which the company operates (Nzekwe, Okoye & Amahalu, 2021). Conversely, Solaimani & Sedighi (2020) found a negative relationship between environmental social responsibility and profitability.

2.1.8 Ethical Social Responsibility Disclosure and Sustainability Development

Social responsibility disclosure (SRD) is also related to ethical and moral responsibility because of the common belief that companies will perform or desist from activities depending whether those actions are beneficial or harmful to society, these actions includes the waste recycling process which has a direct link with the company responsibility to the environment (Oshiole, Elamah & Amahalu, 2020). Tseng, Chang, Lin, Wu, Chen, Xia and Xue (2020) suggest that companies with available resources may chose to spend those resources on doing good by waste recycling and those expenses, in turn, lead to improve corporate social profit (CSP) and sustainable development. Similarly, Walker, Yu and Zhang (2020) report a negative association between ethical social responsibility disclosure and profitability.

2.1.9 Philanthropic Social Responsibility Disclosure and Sustainability Development

Egolum, Amahalu and Obi (2019) stated that when it comes to the linkages between philanthropic social responsibility disclosure and sustainable development, the normative case advises that companies should assume socially responsibilities since it is morally correct to do so. Fan, Fang, Zhang and Yu (2022) concludes that the firm whose businesses heavily depends on trust and cooperation between firms and their stakeholders have incentives to behave trustingly, reliably, and cooperatively so as to achieve a competitive advantage over those that do not. Businesses should take into consideration the community and environmental impacts when carrying out the business activities to enhance sustainable development.

2.2 Theoretical Review

2.2.1 Stakeholders Theory

Stakeholder theory was first described by Dr. F. Edward Freeman, a professor at the University of Virginia, in his landmark book, "Strategic Management: A Stakeholder Approach." In 1984. It suggests that shareholders are merely one of many stakeholders in a company. The stakeholder ecosystem, this theory says, involves anyone invested and involved in, or affected by, the company: employees, environmentalists near the company's plants, vendors, governmental agencies, and more. Freeman's theory suggests that a company's real success lies in satisfying all its stakeholders, not just those who might profit from its stock. Stakeholder Theory is a view of capitalism that stresses the interconnected relationships between a business and its customers, suppliers, employees, investors, communities and others who have a stake in the organization. The theory argues that a firm should create value for all stakeholders, not just shareholders

2.3 Empirical Review

Mamudu (2022) studied the relationship between corporate social responsibility (CSR) and community development using the Nigerian oil industry from 2011-2019. The study made use of ordinary least square regressions in analyzing the relationship between corporate social responsibility and community development. The study found a negative relationship between corporate social responsibility and community development.

Olayinka (2022) examined the relationship between corporate social responsibility and financial performance in Nigeria from 2015-2019. The study made use of Panel least square (PLS) regression in determining the relationship between the corporate social responsibility and financial performance. The findings of the study found that corporate social responsibility has a positive and significant relationship on earnings per share, return on equity and Tobin's Q.

Carroll (2022) analyzed the relationship between corporate social responsibility and profitability of the companies listed on the floor of Nigerian Stock Exchange from 2013-2020 in USA. The study collected the data from secondary source and the data were analyzed using content analysis and panel least sqaure regression technique. The result found no significant relationship between social responsibility and profit after tax (PAT)

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Erhun (2015) examined sustainable approach to economic development in Nigeria from 2003-2014. The approach of the study is to seek a sustainable approach to economic development in Nigeria and the analysis was done using regressions. The study found a negative impact of sustainable approach to human development index (HDI).

Ejumudo (2015) examined sustainable development and economic development in Nigeria from 2001-2013. The study utilized valuable secondary sources of data from selected sample during the study and was analyzed using multiple regressions. The study found that sustainable development has a significant and positive impact on per capita income.

Uzonwanne and Chinecherem (2015) examined sustainable development in Nigeria and the problem of urbanization and urban unemployment from 2000-2013. The data for the study were collected from the Central Bank of Nigeria Statistical bulletin and National Bureau of Statistics.

Descriptive statistical method was used and analyzed using multiple regressions. The study showed that urbanization and urban unemployment affect the economic sustainability of Nigeria negatively.

Obafemi (2015) examined sustainable development and economic improvement in Nigeria from 2001-2013. The study made use of ordinary least square in the test of hypotheses and the study found a negative relationship between sustainable development and income per capita.

Uwuigbe (2016) conducted a study on corporate social environmental sustainability reporting and firms' performance in Nigeria from 2003-2014. The multiple regression analysis was used to test the research propositions in the study. The study observed that there was a significant relationship between return on assets of sampled firms and the level of corporate social environmental sustainability reporting.

Nze, Okoh and Ojeogwu (2016) examined the effect of corporate social responsibility on earnings of quoted firms in Nigeria in the oil and gas sector over a ten-year period 2006-2016. Using the ordinary regression analysis for the study, the study found that corporate social responsibility has a positive and significant effect on earnings per share (EPS) of firms studied.

Gray (2016) studied the relationship between social and environmental performance disclosure and financial market performance of companies in United Kingdom (UK) from 2000-2014. Secondary sources were used for the data collection and the data were analyzed using ordinary least square and the linear regression result found no significant relationship between environmental reporting and Tobin's Q.

Nwobu (2017) conducted a study on determinants of corporate sustainability reporting in selected companies in Nigeria from 2007-2014. Secondary data from annual reports, sustainability reports of companies and organisations were also used to actualize the research objectives in the study. Panel data regression techniques namely Fixed Effects estimation and Random Effects estimation in addition to Pooled Ordinary Least Squares regression were carried out on the secondary data collected from corporate reports. The study showed that there was a significant but negative between firm size, profitability and sustainability reporting.

Haji (2017) examined the effect of corporate social responsibility on financial performance of a sample of 85 companies listed on Bursa Malaysia for the years (2006 – 2019). A multivariate

regression analysis and descriptive statistics were used. The study found that board size has a significant relationship with the donation disclosures.

3. MATERIAL AND METHOD

The research design that was employed in this study is *ex-post facto* research design. The population of this study consisted of all the sixteen (16) industrial goods firms quoted on the floor of the Nigerian Exchange (NGX) Group as at 31st December, 2021. They include: Dangote Cement Plc; Beta Glass Plc; CAP Plc; Ashaka Cement Plc; Cement Company Northern Nigeria; Berger Paints; CutixPlc; First Aluminum Nigeria Plc; DN Meyer Plc; Premium Paints Plc; African Paints Nigeria Plc; Austin Laz& Company Plc; Avon Crowncaps& Containers Nigeria Plc; Portland Paints Plc; Greif Nigeria Plc and Wapco Nigeria Plc. Purposive sampling technique was adopted to select the sample size of this study. The criteria for selection will be based on the industrial goods firms that were continuously listed by the Nigerian Exchange (NGX) Group during the period 1st January 2011 to 31 December 2021 and whose financial statements and reports are available and have been consistently submitted to Nigerian Exchange (NGX) Group for the period of Study (2011-2021). Thus, the sample size of this study consisted of fourteen (14) quoted industrial goods firms. They include: Dangote Cement Plc; Beta Glass Plc; CAP Plc; Ashaka Cement Plc; Berger Paints; CutixPlc; First Aluminum Nigeria Plc; DN Meyer Plc; Premium Paints Plc; Austin Laz& Company Plc; Avon Crowncaps& Containers Nigeria Plc; Portland Paints Plc; Greif Nigeria Plc and Wapco Nigeria Plc. This study relied on secondary data which were sourced from the annual reports and statements of account, stand alone reports of the sample listed industrial firms.

3.1 Measurement of Variables

Table 1: Variable Measurement

Variable	**Acronym**	**Measurement**
Independent Variable (Social Responsibility Disclosure**)**		
Environmental Social Responsibility Disclosure	ENVSRD	> Total Environmental Social Responsibility Disclosure Index > Maximum Social Responsibility Disclosure Index of a firm
Ethical Social Responsibility Disclosure	ETHSRD	> Total Ethical Social Responsibility Disclosure Index > Maximum Social Responsibility Disclosure Index of a firm

Philanthropic Social Responsibility Disclosure	PHSRD	> Total Philanthropic Social Responsibility Disclosure Index > Maximum Social Responsibility Disclosure Index of a firm
Dependent Variable (Sustainable Development)		
Waste Recycling	WR	Assign 0 = if the item is not disclosure Assign 1= if the item is disclosure

This stud adapted the model of Ekweozor, Ogbodo and Amahalu (2022):

$NPM = \beta_0 + \beta_1 ETHSR_{it} + \beta_1 ECOSR_{it} + \beta_1 LEGSR_{it} + \mu_{it}$ - - - equ (i)

Where:

NPM = Net Profit Margin

ETHSR = Ethical Social Responsibility

$ECOSR_{it}$ = Economic Social Responsibility

$LEGSR_{it}$ = Legal Social Responsibility

Following the proposed adapted model, the following model was constructed:

$WR = \beta_0 + \beta_1 ENVSRD_{it} + \beta_1 ETHSRD_{it} + \beta_1 PHSRD_{it} + \mu_{it}$

Where:

β_0 = constant term

$\beta_1 - \beta_3$ = slopes to be estimated of firm *i* in period *t*.

$\mu_{i,t}$= error term of firm *i* in period *t*

WR_{it} = Waste Recycling of firm í in period t

$ENVSRD_{it}$ = Environmental Social Responsibility Disclosure of firm í in period t

$ETHSRD_{it}$ = Ethical Social Responsibility Disclosure of firm í in period t

$PHSRD_{it}$ = Philantropic Social Responsibility Disclosure of firm í in period t

Content analysis was used to code the data quantitatively such as counting the number of words, using a CSR activities checklist to measure CSR index. The CSR disclosure index (CSRDI) was used to measure CSR activities, and this index is developed based on Global Reporting Initiatives (GRI) G4 framework. GRI index is most widely used around the world in determining the activities of CSR in various dimensions. This research used content analysis method in order to identify whether firm has disclosed its CSR activities under each GRI G4 category. GRI G4 framework

includes six main dimensions which are: economic performance with 9 items, environmental performance with 30 items, human rights performance with 9 items, employees practices performance with 14 items, product performance with 9 items, and society performance with 8 items (GRI guidelines, 2021). In total, there are 79 items reported under GRI are provided in Appendix A. Accordingly, the CSR disclosure index (CSRDI) is calculated as follows:

CSRDI =TDP/MP

Where;

CSRDI = Corporate Social Responsibility Disclosure Index

TDP = Total Disclosure Points of a Firm

MP = Maximum Points for a Firm

4. RESULT AND DISCUSSIONS

4.1 Descriptive Statistics

Table 2 Pearson Correlation Matrix

	WR	ENVSRD	ETHSRD	PHSRD
WR	1.0000			
ENVSRD	0.2085	1.0000		
ETHSRD	0.3657	0.1069	1.0000	
PHSRD	0.5662	0.1785	0.3684	1.0000

Source: E-Views 10.0 Correlation Output, 2023

4.1.1 Interpretation of Pearson Correlation Matrix

The result of the Pearson correlation result in Table 2 reports that there a positive correlation between ENVSRD, ETHSRD, PHSRD and TQ as indicated by the coefficient factors of 0.2085, 0.3657 and 0.5662 respectively.

4.2 Test of Hypotheses

4.2.1 Hypothesis One

Ho_1: There is no significant relationship between environmental social responsibility disclosure and waste recycling of quoted industrial goods firms in Nigeria.

Table 3 Binary Probit Regression Analysis between Environmental Social Responsibility Disclosure and Waste Recycling

Dependent Variable: WR

Method: ML - Binary Probit (Newton-Raphson / Marquardt steps)

Date: 05/10/23 Time: 12:12

Sample: 2011 2021

Included observations: 154

Convergence achieved after 4 iterations

Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.458946	0.175027	2.622136	0.0087
ENVSRD	0.884425	0.336449	2.628704	0.0095

McFadden R-squared	0.243484	Mean dependent var	0.681818
S.D. dependent var	0.467290	S.E. of regression	0.468808
Akaike info criterion	1.276893	Sum squared resid	33.40664
Schwarz criterion	1.316334	Log likelihood	-96.32077
Hannan-Quinn criter.	1.292914	Deviance	192.6415
Restr. Deviance	192.6513	Restr. log likelihood	-96.32567
LR statistic	6.910083	Avg. log likelihood	-0.625460
Prob(LR statistic)	0.009451		

Obs with Dep=0	49	Total obs	154
Obs with Dep=1	105		

Source: E-Views 10.0, Regression Output 2023

4.2.1.1 Interpretation of Regression Results

From the analysed regression result in Table 3; the regression equation signifies that:

WR = 0.458946 + 0.884425 ENVSRD

Using the coefficient of variation from the model presented Table 3, it is observed that ENVSRD (β_1) is positive at 0.884425 when all other variables are held constant. Consequently, a unit change in ENVSRD will lead to a positive change of about 88.44% in WR provided all other variables are held constant. From the McFadden R-squared of 0.243484, the regression co-efficient indicates that about 24.35% of the changes in the dependent variable (WR) is explained by the changes in the independent variable (ENVSRD). The tool of LR statistic helps in determining the overall joint

significant of the explanatory (independent) variable on the dependent or explained variable. At 5% level of significance, the probability of LR statistic = 0.009451 is less than the critical p-value at 0.05.

4.2.1.2 Decision

The null hypothesis is rejected since the Prob (LR statistic) at 0.009451 is less than the critical value of 5% (0.05). This implies that environmental social responsibility disclosure relates to water recycling of quoted industrial goods firms in Nigeria at 5% level of significance.

4.2.2 Hypothesis Two

Ho_2: There is no significant relationship between ethical social responsibility disclosure and waste recycling of quoted industrial goods firms in Nigeria.

Table 4 Binary Probit Regression Analysis between Ethical Social Responsibility Disclosure and Waste Recycling

Dependent Variable: WR

Method: ML - Binary Probit (Newton-Raphson / Marquardt steps)

Date: 05/10/23 Time: 12:14

Sample: 2011 2164

Included observations: 154

Convergence achieved after 3 iterations

Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.532501	0.142261	3.743136	0.0002
ETHSRD	0.780894	0.161208	4.844020	0.0000

McFadden R-squared	0.133728	Mean dependent var	0.681818
S.D. dependent var	0.467290	S.E. of regression	0.468205
Akaike info criterion	1.274400	Sum squared resid	33.32076
Schwarz criterion	1.313841	Log likelihood	-96.12881
Hannan-Quinn criter.	1.290421	Deviance	192.2576
Restr. Deviance	192.6513	Restr. log likelihood	-96.32567
LR statistic	23.46453	Avg. log likelihood	-0.624213

Prob(LR statistic)	0.000003		
Obs with Dep=0	49	Total obs	154
Obs with Dep=1	105		

Source: E-Views 10.0, Regression Output 2023

4.2.2.1 Interpretation of Regression Results

From the analysed regression result in Table 4; the regression equation signifies that:

WR = 0.532501 + 0.780894 ETHSRD

Using the coefficient of variation from the model presented Table 4, it is observed that ENTHSRD (β_1) is positive at 0.780894 when all other variables are held constant. Consequently, a unit change in ENTHSRD will lead to a positive change of about 78.09% in WR provided all other variables are held constant. From the McFadden R-squared of 0.133728, the regression co-efficient indicates that about 13.37% of the changes in the dependent variable (WR) is explained by the changes in the independent variable (ENTHSRD). The tool of LR statistic helps in determining the overall joint significant of the explanatory (independent) variable on the dependent or explained variable. At 5% level of significance, the probability of LR statistic = 0.000003 is less than the critical p-value at 0.05.

4.2.2.2 Decision

The null hypothesis is rejected since the Prob(LR statistic) at 0.000003 is less than the critical value of 5% (0.05). This implies that ethical environmental social responsibility disclosure relate to water recycling of quoted industrial goods firms in Nigeria at 5% level of significance.

4.3.3 Hypothesis Three

Ho_3: There is no significant relationship between philanthropic social responsibility disclosure and waste recycling of quoted industrial goods firms in Nigeria.

Table 5 Binary Probit Regression Analysis between Philanthropic Social Responsibility Disclosure and Waste Recycling

Dependent Variable: WR

Method: ML - Binary Probit (Newton-Raphson / Marquardt steps)

Date: 05/10/23 Time: 12:15

Sample: 2011 2164

Included observations: 154

Convergence achieved after 3 iterations

Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.362582	0.225668	1.606706	0.1081
PHSRD	15.08876	1.781463	8.469870	0.0000

McFadden R-squared	0.320636	Mean dependent var	0.681818
S.D. dependent var	0.467290	S.E. of regression	0.468387
Akaike info criterion	1.274970	Sum squared resid	33.34674
Schwarz criterion	1.314411	Log likelihood	-96.17269
Hannan-Quinn criter.	1.290991	Deviance	192.3454
Restr. deviance	192.6513	Restr. log likelihood	-96.32567
LR statistic	71.73870	Avg. log likelihood	-0.624498
Prob(LR statistic)	0.000000		

Obs with Dep=0	49	Total obs	154
Obs with Dep=1	105		

Source: E-Views 10.0, Regression Output 2023

4.2.3.1 Interpretation of Regression Results

From the analysed regression result in Table 5; the regression equation signifies that:

WR = 0.532501 + 0.780894 PHSRD

Using the coefficient of variation from the model presented Table 5, it is observed that PHSRD (β_1) is positive at 15.08876 when all other variables are held constant. Consequently, a unit change in PHSRD will lead to a positive change of about 15.08876 units increase in WR provided all other variables are held constant. From the McFadden R-squared of 0.320636, the regression co-efficient indicates that about 32.06% of the changes in the dependent variable (WR) is explained by the changes in the independent variable (PHSRD). The tool of LR statistic helps in determining the overall joint significant of the explanatory (independent) variable on the dependent or explained variable. At 5% level of significance, the probability of LR statistic = 0.000000 is less than the critical p-value at 0.05.

4.2.3.2 Decision

The null hypothesis is rejected since the Prob(LR statistic) at 0.000000 is less than the critical value of 5% (0.05). This implies that philanthropic social responsibility disclosure relate to water recycling of quoted industrial goods firms in Nigeria at 5% level of significance.

CONCLUSION AND RECOMMENDATIONS

This study ascertained the relationship between social responsibility disclosure and sustainable development of quoted industrial firms in Nigeria from 2011-2021 periods. Panel data were sourced from the annual reports and accounts of the sampled industrial goods firms. Descriptive statistics were adopted to describe the mean, standard deviation, kutosis and skewness of the study variables, while inferential statistics using correlation analysis and Binary Probit regression were employed via E-Views 10.0 statistical software. Data analysis revealed that a significant and positive relationship exists between environmental social responsibility disclosure and waste recycling ($\beta1 = 0.829307$; p-value = 0.0000<0.05); a significant and positive relationship exists between ethical social responsibility disclosure and waste recycling ($\beta2 = 0.746503$; p-value = 0.0000<0.05); a significant and positive relationship exists between philanthropic social responsibility disclosure and waste recycling ($\beta3 = 0.022601$; p-value = 0.0418<0.05) of quoted industrial goods firms in Nigeria at 5% level of significance. Consequently, this analysis supports growing evidence that social responsibility disclosure have a significant relationship and exerts significant influence on sustainable development at 5% significant level. The study further concludes that the components of social responsibility disclosure considered in this study are important variables in explaining sustainable development of quoted industrial firms in Nigeria.

Given the findings made, the following recommendations were made:

i. Since environmental social responsibility disclosure and waste recycling are positively related, then firms should be environmentally friendly to enable them gain competitive advantage, high liquidity and reduced environmental cost in the long run, thereby leading to a sustainable development.

ii. Considering the positive relationship between ethical social responsibility disclosure and waste recycling, corporate organizations should ensure that they comply with the environmental laws of the nation for improved and sustainable performance.

iii. Government should give tax credit to organizations that participate and contribute towards community development in order to encourage to community development and which would go a long way in enhancing firm performance and sustainable development.

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APPENDIX A

Indicator Protocol Corporate Social Disclosure Based on Global Reporting Initiative Standard version 4.0

Economic Performance Indicators
Aspect: Economic Performance
EC1: Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments
EC2: Financial implications and other risks and opportunities for the organization's activities due to climate change.
EC3: Coverage of the organization's defined benefit plan obligations.
EC4: Significant financial assistance received from government. Aspect: Market Presence
EC5: Range of ratios of standard entry level wage compared to local minimum wage
EC6: Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.
EC7: Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation.
Aspect: Indirect Economic Impacts
EC8: Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.
EC9: Understanding and describing significant indirect economic impacts, including the extent of impacts.
Environment Performance Indicators
Aspect: Materials
EN1: Materials used by weight or volume
EN2: Percentage of materials used that are recycled input materials.
Aspect: Energy
EN3: Direct energy consumption by primary energy source.
EN4: Indirect energy consumption by primary source.

Source: GRI G4 Sustainability Reporting Guidelines, 2023

Indicator Protocol Corporate Social Disclosure Based on GRI Standard version 4.0

EN5: Energy saved due to conservation and efficiency improvements.
EN6: Initiatives to provide energy-efficient or renewable energy-based products and services, and reductions in energy requirements as a result of these initiatives
EN7: Initiatives to reduce indirect energy consumption and reductions achieved.
Aspect: Water
EN8: Total water withdrawal by source
EN9: Water sources significantly affected by withdrawal of water
EN10: Percentage and total volume of water recycled and reused. Aspect: Biodiversity
EN11: Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.
EN12: Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.
EN13: Habitats protected or restored
EN14: Strategies, current actions, and future plans for managing impacts on biodiversity.
EN15: Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.
Aspect: Emissions, Effluents, and Waste
EN16: Total direct and indirect greenhouse gas emissions by weight.
EN17: Other relevant indirect greenhouse gas emissions by weight.
EN18: Initiatives to reduce greenhouse gas emissions and reductions achieved.
EN19: Emissions of ozone-depleting substances by weight.
EN20: NOx, SOx, and other significant air emissions by type and weight.
EN21: Total water discharge
EN22: Total weight of waste by type and disposal method.
EN23: Total number and volume of significant spills
EN24: Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.

Source: GRI G4 Sustainability Reporting Guidelines, 2023

Indicator Protocol Corporate Social Disclosure Based on GRI Standard version 4.0

EN25: Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff
Aspect: Products and Services
EN26: Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.
EN27: Percentage of products sold and their packaging materials that are reclaimed by category.
EN28: Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations.
Aspect: Transport
EN29: Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce.
Aspect: Overall
EN30: Total environmental protection expenditures and investments by type.
Human Rights Performance Indicators
Aspect: Investment and Procurement Practices
HR1: Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening.
HR2: Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken.
HR3: Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.
Aspect: Non – discrimination
HR4: Total number of incidents of discrimination and actions taken.
Aspect: Freedom of Association and Collective Bargaining
HR5: Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights
Aspect: Child Labor
HR6: Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor.

Source: GRI G4 Sustainability Reporting Guidelines, 2023

Indicator Protocol Corporate Social Disclosure Based on GRI Standard version 4.0

Aspect: Forced and Compulsory Labor
HR7: Operations identified as having significant risk for incidents of forced or compulsory labor, and measures taken to contribute to the elimination of forced or compulsory labor.
Aspect: Security Practices
HR8: Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations.
Aspect: Indigenous Rights
HR9: Total number of incidents of violations involving rights of indigenous people and actions taken.
Labor Practices and Decent Work Performance Indicators
Aspect: Employment
LA1: Total workforce by employment type, employment contract, and region.
LA2: Total number and rate of employee turnover by age group, gender, and region.
LA3: Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations.
Aspect: Labor/Management Relations
LA4: Percentage of employees covered by collective bargaining agreements.
LA5 regarding significant operational changes, including: Minimum notice period(s) Whether it is specified in collective agreements.
Aspect: Occupational Health and Safety
LA6: Percentage of total workforce represented in formal joint management-worker Health and safety committees that help monitor and advice on occupational health and safety programs.
LA7: Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region.
LA8: Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.
LA9: Health and safety topics covered in formal agreements with trade unions.
Aspect: Training and Education

Source: GRI G4 Sustainability Reporting Guidelines, 2023

Indicator Protocol Corporate Social Disclosure Based on GRI Standard version 4.0

LA10: Average hours of training per year per employee-by-employee category.
LA10: Average hours of training per year per employee-by-employee category.
LA11: Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.
LA12: Percentage of employees receiving regular performance and career development reviews.
Aspect: Diversity and Equal Opportunity
LA13: Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity.
LA14: Ratio of basic salary of men to women by employee category.
Product Responsibility Performance Indicators
Aspect: Customer Health and Safety
PR1: Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.
PR2: Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services, by type of outcomes.
Aspect: Product and Service Labeling
PR3: Type of product and service information required by procedures and percentage of significant products and services subject to such information requirements.
PR4: Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.
PR5: Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.
PR6: Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.
PR7: Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes.

Source: GRI G4 Sustainability Reporting Guidelines, 2023

Indicator Protocol Corporate Social Disclosure Based on GRI Standard version 4.0

Aspect: Customer Privacy
PR8: Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.
Aspect: Compliance
PR9: Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services
Society Performance Indicators
Aspect: Community
SO1: Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting.
Aspect: Corruption
SO2: Percentage and total number of business units analyzed for risks related to corruption.
SO3: Percentage of employees trained in organization's anti-corruption policies and procedures.
SO4: Actions taken in response to incidents of corruption. Aspect: Public Policy
SO5: Public policy positions and participation in public policy development and lobbying.
SO6: Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.
Aspect: Anti-Competitive Behavior
SO7: Total number of legal actions for anticompetitive behaviour, anti-trust, and monopoly practices and their outcomes.
Aspect: Compliance
SO8: Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with laws and regulations.

Source: GRI G4 Sustainability Reporting Guidelines, 2023