International Journal of Development and Economic Sustainability
Vol.13, No.1, pp.18-37, 2025
Print ISSN: 2053-2199 (Print),
Online ISSN: 2053-2202(Online)
Website: https://www.eajournals.org/
Publication of the European Centre for Research Training and Development -UK

Moderating Role of Corporate Social Responsibility on Green Investments and Sustainable Business Performance of Listed Non-Financial Firms in Nigeria

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doi: https://doi.org/10.37745/ijdes.13/vol13n11837 Published January 11, 2025

Appah, E. and Tebepah, S.F. (2025) Moderating Role of Corporate Social Responsibility on Green Investments and Sustainable Business Performance of Listed Non-Financial Firms in Nigeria, *International Journal of Development and Economic Sustainability*, Vol.13, No.1, pp.18-37

Abstract: *This study explored the moderating influence of CSR practices on the association between green investments and sustainable business performance of listed non-financial firms in Nigeria. The study adopted stakeholder theory and cross-sectional survey design with a sample of 542 accountants selected through simple random sampling procedure. A structured questionnaire was employed for data collection after the determination of content validity and reliability of the measurement items through the application of Cronbach alpha. The data were analysed through SmartPLS version 4 for structural equation modelling (SEM). The results showed a positive and significant association between green investments and sustainable business performance of listed non-financial firms in Nigeria; a positive and significant association between green investments and CSR practices of listed non-financial firms in Nigeria; a positive and significant association between CSR practices and sustainable business performance of listed non-financial firms in Nigeria; and the CSR practices positively and significantly moderates the association between green investment and sustainable business performance of listed non-financial firms in Nigeria. From the findings of the study, we concluded that CSR practices positively and significantly moderates the relationship between green investment and sustainable business performance of listed non-financial firms in Nigeria. We recommended amongst others that the government should encourage listed firms on the Nigerian Exchange Group (NGX) to shift towards sustainable business practices which advances the reputation of firms and attract socially conscious investors, reduces their carbon footprint and benefits both firms and the environment in Nigeria.*
Keywords: green investment, CSR, sustainable business performance, stakeholder theory

INTRODUCTION

The current global landscape suggests the pressing environmental issues, bounded by climate change, environmental imbalances, and biodiversity loss, whose impact is felt across economies

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and political territories. Natural insufficiency and atmospheric transformation are the two most central challenges facing the world today. Zheng et al (2021a) suggested that the earth has observed an intense escalation of natural actions, such as winds, floods, and heat waves as a result of fast degradation of glaciers and polar ice raps, as a consequence of environmental wear and tear. Liu et al (2020) argued that ecological issues such as environmental inequity, biodiversity loss, soil degradation and conservation devastation are becoming the worry of global economy and as they have been directly related with sustainable growth and human survival. According to Abuatwan (2023), these challenges are recognized as alarming threats to humanity's long-term development and survival, which have attracted attention from experts and institutions. In reaction to this significant moment, the introduction of green investments provides stimulating effects on meeting some of the challenges facing the environment. Green investment is a financial tool that encourages sustainability and solves some of the climatic changes by investing on environmentally sustainability projects (World Bank, 2022). In a similar vein, Liu et al (2020), Ngwenya and Simatele (2020) noted that the utilisation of green investments symbolizes a vital option and a pathway for sustainable economic growth in emerging countries, as well as a avenue to guarantee sustainability through low energy consumption and emissions. Abuatwan (2023), Li et al (2022), Zheng et al (2020) suggested that switching to a sustainable, carbon neutral international system requires conversion across the financial system based on green investments that provide ecological benefits and empowering financial stakeholders supporting investment in firms or projects that offer environmental gains to promote sustainable business performance. In the same vein, the challenges facing the environment in Nigeria can also be addressed by firms adopting green investment practices to improve ecologically sustainable business practices. Furthermore, firms can employ CSR to achieve the expectations of society and enhance their reputation (Wu, 2022). Nonetheless, implementing green investment, CSR, and sustainable business performance practices has been given little attention in Nigerian firms.

Green investments (GI) refer to investment that promotes environmental sustainability and reduce the harm to the environment (Judith et al, 2020; Tran et al, 2020). These investments support projects, firms or initiatives that reduce green house gas (GHG), promote renewable energy, improve energy efficiency, support sustainable infrastructure, protect natural resources, foster eco-friendly technologies, encourage sustainable land use and support climate change adaption. According to Judith et al (2020), GI are those investments that aim to mitigate the negative effects of human activities on the environment and promote the shift toward a sustainable, low carbon, and resource-efficient economy by using a type of able energy, energy efficiency, and sustainable transportation. GI is to using public and private funds to purchase products and services that promote the environmental sustainability, such as preserving ecosystem diversity and repairing climate harm (Tran et al, 2020; Rokhnmawati, 2021; Suo et al, 2021; Ye & Dela, 2023).

Many studies have investigated green investment, CSR and sustainable business performance. Deng and Lu (2017) study revealed that green financing improves the environmental performance of food firms. Also Zhou et al (2020) argued that green financing influences the environment and economy significantly. However, the most of these studies have largely centered on developed countries. The findings of the studies reveal a positive association between green investment and sustainable performance, (e.g. Rasoolimanesh et al, 2020). However, some studies have produced

mixed or negative findings (e.g. Paramati et al, 2016). Ye and Dela (2023) suggested that firms with better CSR practices are more likely to invest in renewable energy projects and receive green loans designed to finance environmentally friendly projects. Conceptual research has proposed frameworks and models to understand the linkages between CSR and green investment, identifying factors such as institutional support for sustainability, availability of green investment opportunities, and financial resources (e.g Indriastuti & Chariri, 2021;Cunha et al, 2021; Gangi et al, 2021; Wang et al, 2020). This study investigates the moderating role of CSR on the relationship between green investments on sustainable business performance of listed non-financial firms in Nigeria. To achieve the main objective of this study, the following are the specific objectives:

1. To evaluate the relationship between green investments on sustainable business performance of listed non-financial firms in Nigeria;
2. To evaluate the relationship between CSR on sustainable business performance of listed non-financial firms in Nigeria;
3. To investigate the moderating influence of CSR on the relationship between green investments on sustainable business performance of listed non-financial firms in Nigeria;

The following null hypotheses were tested in this study:

Ho2: Green investment does not positively and significantly influence sustainable business performance of listed non-financial firms in Nigeria.

Ho2: CSR does not positively and significantly influence sustainable business performance of listed non-financial firms in Nigeria.

Ho3: CSR does not positively and significantly moderates the relationship between green investments and sustainable business performance of listed non-financial firms in Nigeria.

LITERATURE REVIEW

Concept of Green Investment: Green investment (GI) refers to investments that promotes environmental sustainability and reduce the harm to the environment. These investments support projects, firms or initiatives that reduce green house gas (GHG), promote renewable energy, improve energy efficiency, support sustainable infrastructure, protect natural resources, foster eco-friendly technologies, encourage sustainable land use and support climate change adaption. According to Judith et al (2020), GI are those investments that aim to mitigate the negative effects of human activities on the environment and promote the shift toward a sustainable, low carbon, and resource-efficient economy by using a type of able energy, energy efficiency, and sustainable transportation. GI is to using public and private funds to purchase products and services that promote the environmental sustainability, such as preserving ecosystem diversity and repairing climate harm (Tran et al, 2020). This investment serves society's three primary duties of preserving the environment, conserving resources, and upholding fairness and justice Rokhnmawati, 2021). Ye and Dela (2023) assets that GI is a vital factor in the quest of a sustainable and low-carbon economy, offering important potential for environmental, social, and economic benefits. The investment in renewable power capacity surpassed that of fossil fuel-fired power capacity,

highlighting the growing trend towards GI and its potential to compel the conversion towards a low carbon economy (Suo et al, 2021). According to Ye and Dela (2023), GI not only has the possibility to decrease GHG emissions and other environmental impacst but also to stimulate economic growth, create new jobs, and improve human well-being. The authors further argued that GI can also assist businesses gain and uphold the confidence and support of stakeholders. This is accomplished by reducing energy consumption and GHG emissions, which decrease the negative effects of the firm's operations on the environment. The goals of GI include generating financial returns, reducing investments risks and impacts, promote sustainable development, supporting the transition to a low carbon economy and encouraging environmentally responsible business practices (Judith et al, 2020; Tran et al, 2020; Rokhnmawati, 2021; Suo et al, 2021; Ye and Dela, 2023). It unites and manages the benefits of the economy, environment, and society to achieve long-term social and economic development and produce pleasant society (Suo et al, 2021; Du et al, 2023; Ye & Dela, 2023).

Concept of Sustainable Business Performance: This is a firm's ability to achieve its financial objectives while simultaneously addresses social, environmental and governance issues. It involves integrating sustainability into the organisations strategy, operations and culture to create long term value for shareholders, stakeholders and the environment. According to Ye and Dela (2023), sustainability practices of businesses have become a vital aspect of interest for existing and potential stakeholders because of their capacity to guarantee the long-term feasibility and well-being of the business and its related economic, social, and environmental systems. Baumgartner and Rauter (2017) noted that sustainability of business performance consists of three dimensions of financial sustainability, social sustainability and environmental sustainability. Toli and Murtagh (2020) argued that environmental sustainability refers to the impact of an organisation's activities on the environment. Ye and Dela (2023), Toli and Murtagh (2020) suggested that it encompasses the effects of its operations on air quality, water quality, land use, biodiversity, climate change, natural resource depletion, waste management and pollution prevention. Achieving environmental sustainability enables organizations to reduce environmental risks and liabilities, improve operational efficiency and cost savings, contribute to a more sustainable future, support climate change mitigation and adaptation and protect natural resources for future generations (Suo et al, 2021; Du et al, 2023; Ye and Dela, 2023). Financial sustainability refers to an organisation's ability to maintain its financial health and stability over time, ensuring its long term viability and success. It involves managing financial resources effectively, generating sufficient revenue, and maintaining a healthy financial position. It includes revenue growth and diversification, expense management and cost control, profitability and margin improvement, cash flow management and liquidity, debt management and leverage, investment and fund strategy, transparency and accountability in financial reporting, long term financial planning and strategy (Cheah et al, 2019; Ye and Dela, 2023). According to Fernando et al (2019), social sustainability is the ability of an organization to maintain social relationships, promote social justices, and ensure the well-being of individuals and communities. It involves addressing social issues, promoting human rights and fostering culture of inclusivity, diversity and equity. Agbedahin (2019) suggested that achieving social sustainability enables organizations to enhance reputation and brand value, improve operational efficiency, increase customer loyalty and retention, manage risks and opportunities,

improve social cohesion and community relationships and drive social innovation and entrepreneurship (Cheah et al, 2019; Ye and Dela, 2023).

Concept of Corporate Social Responsibility: CSR refers to the responsibility that a business should fulfill to its stakeholders consisting of shareholders, customers, employees, government etc for the attainment of corporate goals and objectives. According to Zhang and Berhe (2022) described CSR as a management model used by an organisation making willing positive environmental contributions through investments in the market, the environment, and society. Wang et al (2021) noted that CSR is a means to advance corporate performance, enhance social credibility, maintain sustainable development, and generate intangible assets such as innovation, human capital, reputation, and culture, which confirms the importance and urgency of effective corporate social responsibility fulfillment. CSR is undertaking financial accomplishments while upholding moral principles, society, and the environment. Ye and Dela (2023) suggested that CSR is a concept that refers to an organisation's actions that affect stakeholders, the environment, the economy, and society. CSR fulfillment has gradually become one of the essential factors for investors to consider corporate risk. The authors further stated that CSR has been gradually proposed alongside economic transformation, emphasizing that companies should not neglect their shareholders, employees, customers and suppliers, the environment, and social responsibility while making profits. According to Li et al (2022), CSR is an intentional movement that assists to transform stakeholders' views of an organisation and prospects of performance, convey indications of performance enhancement, and redirect society's interest to organizations. Consequently, the use of CSR as a moderator in this study focuses on the nexus of green investment on the sustainable business performance of listed oil and gas firms in Nigeria.

Theoretical Review: This study is based on institutional theory. This theory was proposed by DiMaggio and Powell (1983) which considers organisations as operating within a social framework of norms, values and assumptions about what constitutes appropriate or acceptable economic behaviour. This theory intends to describe the procedures and motives for administrative behaviour as well as the influence of organizational behavior arrangements within a wider, inter-organizational framework. According to Appah (2023), institutions are conventional, uniform arrangements of behaviour established within and across organizations and giving meaning to social exchange and order. The authors further noted that these patterns of behaviour include corporate and industry standards, routines, and norms. Institutional theory suggests that organizational behaviours are copied and replicated, instituting taken-for-granted norms and, ultimately, extensive standardized expectations of practice. According to DiMaggio and Powell (1983), an institution is a united and monitoring multifaceted structure comprising of administrative and public agencies that govern other firms through the implementation of the regulation, laws and standards. Bukhari et al (2019), Bukhari (2022) stated that institutional theory is founded on the external ecological forces that an institution faces, which makes an organization to modify its strategies, processes or arrangements. Bose et al, (2017) maintained that this theory changes under outside influences in order to attain definite resources or to gain pecuniary and societal legitimacy. This theory has been useful to several ecofriendly management practices in various industries. External issues could perform a significant part in impacting a company's judgments to practice green management practices (Bukhari et al (2019). However, this theory

suffers from several criticisms. Appah et al (2024) noted that institutional theory suffers from overemphasizes the role of institutions, neglecting individual agency; fails to account for power dynamics and conflict within institutions and lacking clear causal mechanisms and testable hypotheses. Hence, the present study focuses on the use institutional theory to explain the connection between green financing, green investment and corporate social responsibility by understanding the complex factors driving the growth and development of green financing markets and identify opportunities to accelerate the transition to a more sustainable financial system.

Empirical Review

Ye and Dela (2023) conducted a study of the moderating role of CSR on the relationship between green investment and green finance on sustainable business performance in Indonesia. The study adopted cross sectional survey research design and quantitative method with a population of 400 foreign firms in Indonesia while purposive sampling method was used to determine a sample size of 250 industrial firms. The study used primary and secondary sources of data and the primary data was obtained from a structured questionnaire after validity and reliability tests of the constructs. The study also used sustainable business performance as the dependent variable, green financing and green investments as independent variables while CSR as mediator variable. The responses obtained from the 238 questionnaires were analysed using descriptive statistics, PLS-SEM regression model. The results from the regression model suggested that green financing and green investments positively and significantly affect CSR and sustainable business performance in Indonesia. Furthermore, CSR positively and significantly mediates the relationship between green financing and green investments on sustainable business performance of foreign chemical firms in Indonesia.

Fasesin et al (2022) investigated green financing and environmental performance of listed banks in Nigeria. The study employed cross sectional survey research design and the population consisted of all employees of listed banks while purposive sampling methods was used to determine a sample size of 150 senior managers of sampled banks in South west, Nigeria. The study used green financing as independent variable measured using green lending, green investment, green bonds, green training, green and technology and environmental performance as dependent variable while green monetary policy as mediator variable. The study used primary and secondary sources of data collection while the primary data was obtained from a structured questionnaire after validity and reliability tests of the constructs. The responses collected from the questionnaires administered were analysed using SEM and the results suggested a positive and insignificant association between green lending, green investment and green bonds on environmental performance of listed banks in Nigeria while green training, green and technology revealed a positive and significant association on environmental performance of listed banks in Nigeria. The study further revealed that green monetary policy did not mediate on the association of green lending, green investment, green bonds, green training, green and technology and environmental performance of listed banks in Nigeria.

Afzal et al (2022) carried out a research on green finance and sustainable development in Europe. The study used ex post factor research design and a population of all countries in Europe with a

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sample of 40 countries of the 48 nations in the continent. The study used data from secondary sources with environmental degradation as dependent variable and financial development (FD) as independent variable while income level, education, technology, urbanization, technology and population were used as control variables. The secondary data were analysed using descriptive statistics and multiple regression analysis. The results revealed a significant inverse association between carbon emissions and FD; a significant inverse association between natural resources depletion (NRD) and FD; a significant inverse association between green house gas emissions and FD. Also, energy use positively and significantly influences FD of countries in Europe.

Wang et al (2023) investigated green corporate governance, green finance, and sustainable performance in China. The study used cross sectional survey research design and the population of 314 employees working in SMEs. The study used primary and secondary data and the primary data was collected from structured questionnaires after validity and reliability tests. The responses from the questionnaire were analysed using descriptive analysis and PLS-SEM. The results from the regression analysis revealed that green corporate governance and green finance positively and significantly influence CSR, which in turn positively influence sustainable performance. The findings also showed that CSR positively and significantly mediates the association between green corporate governance and sustainable performance. Meanwhile, CSR also mediates the association between green finance and sustainable performance. Furthermore, top management environmental concern moderates the association between corporate governance and sustainable performance significantly, strengthening the influence of CSR on sustainable performance.

Abuatwan (2023) conducted a study of the moderating influence of female board members on the association between green finance and sustainability performance of banks in Palestine. The study used cross sectional research design and a population of all listed banks in the country with a non-probability sampling technique was used to determine a sample size of 104 credit managers in the banking sector. The study utilized primary and secondary data while the primary data employed questionnaire as the major instrument of data collection after validity and reliability tests of constructs. The study used social, economic and environmental dimensions of green finance while long term financial sustainability, short term financial sustainability and environmental sustainability as dependent variable whereas female board members as moderator variable. The responses from the questionnaires were analysed using descriptive statistics and PLS-SEM model. The regression analysis results showed that femininity mixture and individuality extensively contribute to strengthening the positive relationship between green finance and sustainability performance. The findings also suggested that combine green finance into the planned frameworks of banks can give way to environmental yields and improve both long-term and short-term sustainability performance in Palestine.

Chen et al (2022) conducted a study of green banking practices on banks' environmental performance and green financing in Bangladesh. The study used a cross sectional survey research designs and a target population of fifty-seven (57)state-owned, private and foreign owned commercial banks in Bangladesh using non-probability sampling method. The study employed primary source of data collection from a well-structured questionnaire administered to three hundred and fifty four (354) and three hundred and twenty-two (322) were collected for analysis.

The independent variables were banks 'employee related practices, banks daily operation related practices, banks customer related practices and banks' policy related practices while the dependent variables consisted of green financing and banks' environmental performance. The responses collected from the administered questionnaires were analysed using exploratory factor analysis, confirmatory factor analysis (CFA)and structural equation modeling. The empirical results showed that banks 'employee related practices, banks daily operation related practices, and banks' policy related practices positively and significantly influences banks green financing while banks customer related practices positively and insignificantly affects banks green financing. Furthermore, the findings disclosed that banks' green project financing revealed a positive and significant impact on banks' environmental performance. Additionally, banks' daily operation and policy-related practices of green banking positively and significantly influence banks' environmental performances, while banks' employee and customer-related practices indicated an insignificant effect on banks' environmental performances in Bangladesh.

Zheng and Siddik (2022) examined the effects of corporate social responsibility practices and green finance on environmental performance in Bangladesh. The study used legitimacy theory and the population consisted of employees of private commercial banks while non-probabilistic convenience sampling method was applied of 388 bankers. The study used environmental performance of bankers as dependent variable whiles the independent variables consisting of economic, social, environmental, corporate social responsibility activities. The primary data was collected from a well-structured questionnaire administered to the three hundred and eighty-eight (388) bankers while inferential statistics were used for data analysis. The results revealed that economic, social, environmental, corporate social responsibility activities positively and significantly affect environmental performance of private commercial banks in Bangladesh.

Rehman et al (2021) investigated green banking practices and environmental performance in Pakistan. The study used the socially responsible investment theory to explain the correlation between green banking practices and environmental performance of commercial banks. The study employed cross sectional survey and correlational research designs with a target population of bank employees and a purposive sample of 200 employees of retail banks of management level. The study collected primary data from a well-structured questionnaire administered to the sampled bank employees. The dependent variable comprised of environmental performance while the independent variables consisted of banks green operations, banks green investment and banks' green policy. The responses obtained from questionnaires administered were analysed using descriptive statistics and structural equation modeling. The findings from the analysis revealed a positive and significant impact of green banking policy on environmental performance of retail banks in Pakistan; a positive and significant impact of green banking operations on environmental performance of retail banks in Pakistan; and a positive and significant impact of green banking investments on environmental performance of retail banks in Pakistan.

Xu et al (2020) carried a research on green finance and green performance using meta-analysis. The study employed neo classical theory and a target population of 30 independent empirical

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Online ISSN: 2053-2202(Online)
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Publication of the European Centre for Research Training and Development -UK
studies was obtained, and the sample size was 62051 which 12 out of 30 samples focus on green credit, 7 samples focus on green investment, 5 samples focus on green bond, 4 samples focus on green subsidy, and 2 samples focus on green finance. The study used green credit, green bond, green subsidy and green investment as independent variables and environmental performance, green innovation performance and economic sustainability as dimensions to measure green performance while profitability, firm type and region were the control variables. The study obtained data from secondary sources of data collection and meta-analysis using Hunter and Schmidt model was employed for data analysis and the findings indicated a significant positive association between green finance and enterprise green performance and the results further revealed that firm type and region showed a moderating effect in the association between green finance and enterprise green performance. Nonetheless, profitability does not significantly moderate the association between green finance and enterprise green performance.

Hossan et al (2022) investigated green banking practices and financial performance of banks in Bangladesh. The study employed ex post facto and correlational research designs. The population consisted of all 30 banks listed on the Dhaka Stock Exchange up to October 2020 and a sample of 14 banks was selected using purposive sampling technique. The study used secondary data obtained from financial statements of sampled banks and the dependent variable financial performance used return on assets (ROA), return on equity (ROE) and market value of shares (MV) as dimensions while independent variable green banking used green cost and volume of risk management committee with control variables of bank size and operating cost ratio. The data obtained were analysed using descriptive statistics, correlation matrix and panel regression analysis. The regression analysis indicated a positive and significant relationship between green cost, bank size and volume of risk management committee on return on assets (ROA) while operating cost ratio showed a negative association with return on assets (ROA); a positive and significant relationship between green cost, bank size and volume of risk management committee on return on equity (ROE) while operating cost ratio showed a negative association with return on equity (ROE) and a positive and significant relationship between green cost, bank size and volume of risk management committee on market value of shares (MV) while operating cost ratio showed a negative association with market value of shares (MV).

METHODOLOGY

This study adopted cross sectional survey research design and the target population consisted of 109 listed non-financial firms in Nigeria. A sample size of 75 firms was selected as sample size using purposive sampling technique. In selecting the sample for the study, a stratified sampling procedure was applied on the basis of the 109 listed non-financial firms and the justification for using the stratified sampling procedure was to adequately accommodate the different sectors (Basic materials sector (12), consumer goods sector (28), consumer service sector (13), health sector (11), industrial sector (25), oil and gas sector (13), and technology sector (7), of of the sampled firms. This study used primary data obtained from respondents' answers to the questionnaires sent to the respective firms. Meanwhile, the data source was obtained from the responses received from the questionnaires sent to the accounting and finance department of listed

non – financial firms in Nigeria. The major instrument for data collection in this study was a survey questionnaire titled "Green Financing and Green Investment on Sustainable Business Performance Questionnaire (GRFIGRISUBP). A total of 10 questionnaires per firm were sent to the Accounting and Finance Units of the 75 listed non – financial firms listed on the Nigeria Exchange Group (NGX) making a total observation of 750. The constructs were measured using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). However, when questionnaires were distributed to respondents of the study for data collection, only 573 persons responded to the questionnaire. A total of 542 questionnaires were used for data analysis .As a result, 177 respondents failed to return the questionnaires, and 31 questionnaires were not properly filled by the respondents. The measurements of these constructs were self-developed from existing scientific literature of corporate carbon accounting (e.g. Ye & Dela, 2023; Zheng & Siddik, 2022; Suo et al, 2021; Du et al, 2023; Li et al; 2022; Zhang & Berhe, 2022; Agbedahin, 2019; Fernando et al, 2019; Costa et al, 2022;). The study used content validity to validate items in the questionnaire in which the instrument was given to professional accountants (members of ICAN and ANAN) in Bayelsa State who read through and make required corrections. The second process was to validate the instrument where the questionnaire was pre-tested and the responses from the respondents was used to improve on the construct items. The study questionnaire used the test-retest reliability. The instrument was administered to 15 of the target subjects who were not part of the respondents and after a period of two weeks, the same instrument was again given to the same 15 respondents to ascertain the reliability. Consequently, Cronbach Alpha coefficient was used to determine the statistical reliability of the research instrument. The method of data analysis shall be executed using the SmartPLS version 4 for structural equation modelling (SEM). The justification for using Stata is to permit the researchers to apply multivariate regression, while SmartPLS with the use of structural equation modelling is to establish the indirect test of mediation analysis and to clearly demonstrate the direction of arrows for the hypotheses postulated in the study via the path diagram.

Data Analysis Results and Discussion of Findings

Table 1: Adjuated R-Square

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statisitcs	P values
Sustainable Business Performance	0.476	0.476	0.024	19.443	0.000

Source: Authors' Computation (2024)

The study investigated the relationship between green investment on sustainable business performance of listed non-financial firms in Nigeria, with corporate social responsibility acting as a moderating variable. The adjusted R^2 of 0.476 indicates that the model explains 47.6% of the variance in sustainable business performance.

Table 2: Specific Indirect Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statisitcs	P values
Green Investment-> Corporate Social Responsibility -> Sustainable Business Performance	1.159	1.541	0.519	2.948	0.003

Source: Authors' Computation (2024)

Table 2 demonstrates the specific indirect effects of green investment on corporate social responsibility and sustainable business performance of listed non-financial firms in Nigeria. The findings indicated a positive and significant (β = 1.159, t = 2.948, p = .003) association between green investment on corporate social responsibility and sustainable business performance of listed non-financial firms in Nigeria.

Table 3: Structural Equation Model on Green Investment and Sustainable Business

Variables	B	Std. Deviation	T Statistics	P values	Remarks
Green Investment -> Sustainable Business Performance	2.051	1.097	2.279	0.018	**H1 Supported**
Green Investment -> Corporate Social Responsibility	0.503	0.023	22.306	0.000	**H2 Supported**
Corporate Social Responsibility -> Sustainable Business Performance	3.042	1.044	2.914	0.004	**H3 Supported**
Corporate Social Responsibility x Green Investment -> Sustainable Business Performance	1.396	0.624	2.237	0.018	**H4 Supported**

Source: Authors' Creation (2024)

The first hypothesis (**H1)**, which proposed that green investment positively and significantly impact on sustainable business performance of listed non – financial firms in Nigeria, the result was significant (β = 2.051, t = 2.279, p = .018), leading to the support of **H1**. For **H2**, concerning green investment and their expected positive impact on sustainable business performance of listed non – financial firms in Nigeria, the result was significant (β = 0.503, t = 22.306, p = .000), thus

H2 was supported either. For **H3**, which proposed that corporate social responsibility have a significant positive effect sustainable business performance, the result was significant (β = 3.042, t = 2.914, p = .004), meaning **H3** was supported. The moderation analysis showed that **H4**, which posited that corporate social responsibility moderates the relationship between green investment and sustainable business performance of listed non – financial firms in Nigeria, was supported (β = 1.396, t = 2.237, p = .018).

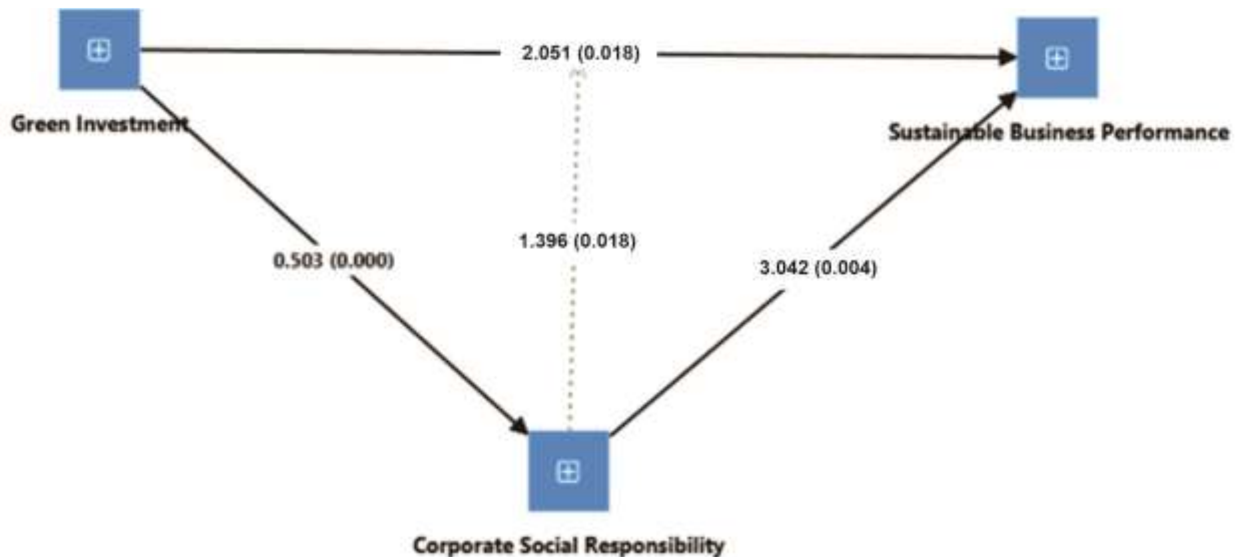

Figure 1: Process-Based Approach of Smart PLS

DISCUSSION OF FINDINGS

This paper investigates the intervening influence of corporate social responsibility on green investment and business performance of listed non – financial firms in Nigeria. The findings of showed that green investment had a positive and significant influence on sustainable business performance of listed non – financial firms in Nigeria. The finding is in agreement with empirical evidence of prior studies of Ye and Dela (2023) who demonstrated that green investment positively and significantly affect sustainable business performance in Indonesia. The authors further demonstrated that firms that implement green technologies and practices are more likely to accomplish sustainable performance results. The study of Eccles and Serafeim (2003) disclosed that firms with high level of environmental performance accomplish better financial performance compared to those that fail to reveal environmental information. In a different study Rasoolimanesh et al (2020) demonstrated that sustainable tourism activities influences environmental and economic performance of firms. Also in Nigeria, Fasesin et al (2022) study of the banking sector revealed a positive association between green lending, green investment and green bonds on environmental performance of listed banks in Nigeria. However, a number of studies have showed mixed or negative outcomes. The investigation carried out by Kassinis and Vafeas (2006) established that investment in environmental management systems did not

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Publication of the European Centre for Research Training and Development -UK

significantly impact on financial performance. In a similar investigation conducted by Paramati et al (2016) indicated that investments in renewable energy negatively impact on financial performance in the short run nevertheless revealed a positive outcomes in the long run. Notwithstanding the mixed findings of some studies, the investigated carried by Lee and Ferasso (2022) noted that green investment positively and significantly impact on sustainable performance, mostly when merged with good environmental management practices. To further support the finding of the current study, the outcome of the prior study implies that green investment influences business performance of listed non – financial firms in Nigeria.

Focusing on the empirical evidence of green investment and corporate social responsibility, the findings indicated that there was a positive and significant relationship between green investment and corporate social responsibility of listed non – financial firms in Nigeria. In view of prior studies, Gangi et al. (2021) study indicated that green financing had a positive and significant effect on firm's environmental performance and CSR practices. Similarly, the study conducted by Wang et al (2021) that investigated the link between CSR and green bonds, a fixed-income security particularly issued to fund eco-friendly projects. The study revealed that firms with improved CSR performance are more likely to issue green bonds to improve a firm's CSR reputation. In the context of Indonesia Chemical firms, Ye and Dela (2023) in their study show that green investment had a positive and significant relationship effect on corporate social responsibility of foreign chemical firms in Indonesia. Cunha et al (2021) demonstrated that to recognize the connection between CSR and green investment, certain factors are identified as institutional support for sustainability, accessibility of green investment opportunities, and financial resources. Ye and Dela (2023) also established that firms that engage in sustainable practices and CSR practices are more likely to have access to green investment opportunities and may benefit from better reputation, reduced risk, enhanced stakeholder relations, and increased access to capital. Accordingly, our finding that there was a positive and significant association between green investment and corporate social responsibility is supported by the existing empirical scholarship.

Evaluaitng the empirical evidence of corporate social responsibility and sustainable business performance, the findings showed a positive and significant relationship between corporate social responsibility and sustainable business performance of listed non – financial firms in Nigeria. The finding is in agreement with the empirical evidence of earlier studies of Mani et al. (2018) demonstrated a positive link between CSR and sustainable company performance. The findings show that firms that embrace CSR practices are more likely to attain successful outcomes in sustainability. Moreover, empirical studies have established the association between CSR and sustainable performance. CSR and financial performance were found to have a positive association, according to research done by Orlitzky et al (2003). Therefore, our finding that there was a positive and significant association between corporate social responsibility and sustainable business performance is supported by the existing empirical research.

For the nexus between corporate social responsibility on green investment and sustainable business performance of listed non – financial firms in Nigeria, the outcome of the current study demonstrated that CSR activities moderates a positive and significant relationship between green f investment and sustainable business performance of listed non – financial firms in Nigeria. The

finding is confirmed by the empirical evidence of previous studies of Gilchrist et al. (2021) demonstrated a positive connection between corporate social responsibility and green investment. Hence, firms with a strong CSR standing are more likely to draw green investment, as investors are more interested in supporting firms committed to sustainable practices. This is due to the fact that green financing is often seen as a way to support sustainable development and address environmental and social issues. Jinru et al (2022) suggested that CSR practices can mediate between green investment and sustainable business performance. This implies that firms can improve their access to green investment and by engaging in CSR practices, leading to improved sustainable business performance. Hence, CSR practices can positively influence a firm's financial performance, which can be further augmented by leveraging green investment and opportunities. Dai et al (2022) argued that firms prioritizing CSR schemes are more likely to accomplish long-term financial accomplishment. Another argument is that green investment can support the adoption of sustainable business practices, improving a firm's CSR profile. Sun, et al (2020) established that firms that engage in sustainable business practices are more likely to be viewed positively by stakeholders, including investors and customers. Ye and Dela (2023) also noted that CSR practices can improve access to green investment. The authors further noted engaging in CSR practices can improve businesses' access to green investment, leading to better sustainable business performance. Studies show that CSR can moderates between green investment and sustainable business performance (Dai et al, 2022). To further reinforce the finding of the current study, the outcome of prior studies implies that CSR practices can mediate between green investment and sustainable business performance.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

This study explored the moderating impact of CSR practices on the connection between green investment and sustainable business performance of listed non-financial firms in Nigeria. The results from the SEM output established a positive and significant relationship between green investment and sustainable business performance of listed non-financial firms in Nigeria; green investment positively and significantly influence CSR practices; a positive and significant relationship between corporate social responsibility and sustainable business performance of listed non – financial firms in Nigeria and CSR activities moderates a positive and significant relationship between green investment and sustainable business performance of listed non – financial firms in Nigeria. On the basis of the findings, the study concluded that CSR practices influences the connection between green investment and sustainable business performance of listed non – financial firms in Nigeria. Therefore, the following recommendations were provided:

1. The government should establish strong institutions that ensure that firms pursue greener policies and practices. This is so because the presence of strong environmental protection institutions facilitates in making sure that firms are kept in control and organizational activities and policies are not harmful for the environment.
2. Green investment consists of financial instruments and methods that are intended to support sustainability and assist the movement towards a low-carbon economy. Hence, firms should implement green financing instruments such as green bonds and green loans which seek to encourage and advance environmental and business sustainability.

3. Firms that implement green investment initiatives frequently perform better in terms of the environment because they can fund projects that lessen their environmental effect and enhance resource efficiency. Therefore, firms should be encouraged to engage in CSR activities geared towards enhancing environmental and social performance of listed firms on the Nigerian Exchange Group (NGX).
4. The government should encourage listed firms on the Nigerian Exchange Group (NGX) to shift towards sustainable business practices which advances the reputation of firms and attract socially conscious investors, reduce their carbon footprint, and benefit both the firms and the environment in Nigeria.

Implication of the Study and Area of Further Study

This study has made important theoretical contributions to the literature on green investment, CSR and sustainable business performance in numerous ways. This investigation is grounded on the stakeholder theory. The moderating influence of CSR on green investment and sustainable business performance of listed non – financial firms in Nigeria is connected to a number of theoretical implications linked to green investment, CSR, and sustainability. First, green investment and sustainable business performance connection stress the position of ecologically sustainable projects and financial services in promoting sustainability. Second, CSR and sustainable business performance association implies that responsible business practices assist to attain long-term sustainability goals. Third, green investment, CSR, and sustainable business performance link emphasizes the significance of a complete method to sustainability management. The practical implications for managers of non financial firms in Nigeria are to invest in sustainable and eco-friendly projects, prioritize CSR practices, and ensure financial performance and sustainability in the long term. This can be accomplished by adopting sustainable production processes, waste reduction programs, and compliance with Nigerian environmental regulations. Hence, Board of Directors, and managers of listed firms must bring into line their business practices with the expectations of responsible and sustainable practices in Nigeria. Also firms in Nigeria should engage with stakeholders, and contribute to the community advancement and growth

No doubt, this study has generated valuable findings for finance, investment and economics scholarship and practice. However, it is not without certain restrictions and limitations as the design was a cross sectional survey which collected data at a distinct spot in time. Hence, further studies should apply longitudinal design that are appropriate for the determination of green investment and sustainable business performance with CSR as the moderator variable to improve on the external validity of the study. The study can be extended to include more variables. For example, more types of financial development or environmental degradation. Further studies can choose different sample, for example, it would be interesting to find out whether these findings hold in different sectors, geographical areas etc. This study has relied on primary data only so further studies should apply different design and methodologies for more precise and comprehensive outcomes. It is vital to concede that the scope of the study is restricted to non-financial firms in Nigeria, and the findings cannot be generalized to other sectors and nations. Furthermore, the study only investigates the moderating influence of CSR and neglects other

potential moderators that may affect the link between green investment and sustainable business performance. Additionally, the investigation does not survey the unintended consequences of green financing on other aspects of business performance, such as competitiveness etc. Different cultural, ethical, social, and ecological factors may impact on the outcome of the study differently, and the findings may also be different in other ways. Therefore, further studies should be conducted taking note of the several restrictions and limitations of the current investigation in Nigeria.

Declaration of Potential Conflict

We declare that there is no potential conflict to the publication of this paper and that the authors make equal contribution to this research.

Acknowledgement

We would like to express our profound gratitude and deep regards especially to the Tertiary Education Trust Fund (TETFUND) for the provision of the grant (funding) for this research project and Isaac Jasper Boro College of Education Sagbama, Bayelsa State, Nigeria for the enabling environment to conduct and complete the study.

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