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Article

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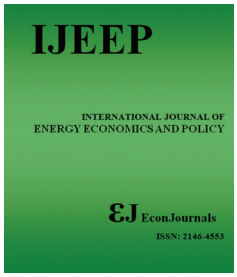

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Carbon Emission Disclosure and Financial Performance of Quoted Nigerian Financial Services Companies

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ABSTRACT

Countries and businesses all over the world are focusing on initiatives to safeguard the environment. The goal of stabilizing greenhouse gas concentrations at a level that would preclude harmful anthropogenic interaction with the climate system is a key topic of focus during numerous endeavours. This study examined the relationship between the financial performances of quoted Nigerian financial services companies and carbon emission disclosure. The study employed ex-post facto research design and secondary data from the annual report of quoted Nigerian financial services companies. Multiple regression analysis was on a panel data set. Results show the variable that significantly returns on equity are 'other indirect emission' disclosure -scope 3 (coefficient = 0.416 and probability = 0.087), firm size (coefficient = 0.191 and probability = 0.089), capital intensity (coefficient = 0.000149 and probability = 0.000) and growth (coefficient = −0.0258 and probability = 0.014). The impact of other indirect emission disclosure -scope 3 on return on equity is positive and statistically significant. Also, the result shows the variable that significantly influences the return on sales are 'other indirect emission' disclosure -scope 3(coefficient = 0.790 and probability = 0.001), firm size (coefficient = −0.395 and probability = 0.053), capital intensity (coefficient = 0.000194 and probability = 0.001) and growth (coefficient = 0.0360 and probability = 0.073). It was discovered that other indirect emission disclosure – scope 3 has a positive and significant effect on financial performance (ROE and ROS). This study concluded that carbon emission disclosure significantly influences the return on equity of the selected quoted Nigerian financial services companies. Also, the study concluded that carbon emission disclosure significantly influences the return on sales of the selected quoted Nigerian financial services companies.

Keywords: Carbon Emission Disclosure, Scope 3, Financial Performance, Financial Service Companies
JEL Classifications: O16, Q51, Q56

1. INTRODUCTION

Increased economic activity not only raises people's standards of living but also depletes natural resources and increases carbon emissions. (Trufvisa and Ardiyanto, 2019; Mardani et al., 2019).

The United Nations Framework Convention on Climate Change (UNFCCC) explains that human activities, both direct and indirect, are factors that lead to climate change which shifted the world's atmosphere composition. There has been an increase in interest in studies on greenhouse gas (GHG) emissions in recent years, as these emissions may have a substantial impact on global climate change (Jones and Doolittle, 2017). According to Ogbonna and Ebimobowei (2011), for the purpose of monitoring the impact of business operations on the environment, Federal Environmental Protection Agency (FEPA) and National Environmental Standard and Regulatory Enforcement Agency (NESREA) were established by the Nigerian government. However, there is presently no

legal requirement for Nigerian businesses to disclose their environmental risk, and there is no rating system in Nigeria for categorizing businesses' corporate environmental performance, which would have provided the general public with an overview of businesses' environmental practices. Although there might be a link between increased carbon emissions disclosure and better corporate performance, environmental reporting is unregulated in Nigeria, so it is unclear what motivates businesses to voluntarily disclose their environmental information (Akanno et al., 2015).

Existing research on the factors influencing disclosures of carbon emissions is still irresolute. Most studies have discovered that profitable businesses report more on carbon emissions (Faisal et al., 2018; ; Jannah and Muid, 2014). Though, several studies claimed the relationship between carbon emission disclosure and financial performance was insignificant (Tauringana, and Chithambo 2015; Choi et al, 2013). Most studies have also discovered that larger businesses provide more information about their carbon emissions. (Borghei-Ghomi and Leung, 2013; Choi et al., 2013). This study aims to provide evidence on the relationship between carbon emission disclosure and the financial performance of quoted Nigerian financial services companies for the period of 2015–2020. The findings of this study may contribute to expanding the carbon emission disclosure by Nigerian corporations.

2. LITERATURE REVIEW

2.1. Legitimacy Theory

The legitimacy theory urges businesses to make sure that the public will approve of their actions and performance. This suggests that organizations that experience issues with legitimacy have a tendency to release more information in order to reassure the public about their sustainability performance. According to the legitimacy theory, businesses must publicly announce and report their sustainability efforts in order to maintain their legitimacy. Businesses that are vulnerable to sustainability problems also disclose more information in an effort to allay community criticism, meet stakeholder expectations, enhance reputation, and ultimately draw in funding (Faisal et al., 2012). The attention to how organizations handle and evaluate their GHG emissions has brought about companies trying to legitimize their activities by voluntary disclosure (Joseph and Mshelia, 2015). The extent of societal anticipation and worry about global warming influences a company's response to justify its actions in mitigating climate change. In legitimacy theory, an organization and society are in a social contract (Deegan and Unerman, 2008). Because this social compact is always changing along with society, organizations must adapt to meet their expectations (Mousa and Hassan, 2015). Without this conformity, society can deny organizations the right to carry out their operations. It is for these reasons; this study also adopted the legitimacy theory.

2.2. Stakeholder Theory

Stakeholders involve "any group or individual who can affect or is affected by the achievement of the corporation's goal," (Freeman, 1984). Stakeholder theory complements the legitimacy theory through claim that an organization is subject to numerous social contracts with each stakeholder rather than a solitary social contract with society. This is due to the fact that each stakeholder has a unique viewpoint on the organization's actions (Deegan and Unerman, 2008).The stakeholders' concept is an explainable theory for reporting social and environmental matters (Ofoegbu, Odoemelam, Okafor and Ntim, 2018). The stakeholder idea considers more than just shareholders. The larger group consists of the government, local communities, creditors, debtors, employees, and customers e.t.c. Schaltegger and Csutora (2012) explain that companies report providing stakeholders with carbon information such as the shareholders, media, NGOs, regulators, customers, and many other groups that need it to enlighten them about their accomplishments influencing their choices and decisions. Stakeholder engagement is a critical criterion that shows a company's level of social responsibility, which could be identified through different activities such as dialogue with stakeholders, disclosure of environmental and social performance, training and development for employees, community aid programs, level of environmental emissions, policies for human rights and health and development schemes. This social contract that commercial entities should conduct their operations in accordance with societal norms It is for these reasons; this study adopted the stakeholder theory.

2.3. Signaling Theory

The signaling theory explains how information lopsidedness is challenging. When investors and firm management have access to different aggregates of information, information asymmetry becomes a problem (Healy and Palepu, 2001). Therefore, the main goal of information disclosure is to lessen information asymmetry. According to signaling theory, businesses report to demonstrate their successes, set themselves apart from the public, and lessen information asymmetry as well increasing their standing and public opinion (Joseph and Mshelia, 2015). According to signaling theory, voluntarily disclosing non-financial information, such as private information, should communicate positive news to investors and boost a company's worth. Prior studies opined that building an environmental reputation among executive and investor stakeholder groups is more strongly influenced by the quality of corporate environmental disclosure. (Ganda and Milondzo, 2018). It results in a positive reputation that can attract prospective investors (Kurnia et al., 2020). Companies are motivated to freely share private information since doing so can be seen as a sign of strong performance and a reduction in information asymmetry. A company is more likely to gain from higher share prices if it discloses its carbon emissions in a more thorough and objective voluntary manner. Additionally, the stock market is likely to penalize non-disclosing corporations and view non-disclosure conduct as a negative indication (Liu et al., 2017). It is for these reasons; this study also adopted the signaling theory.

2.4. Carbon Emission

Natural and industrial emissions contribute to greenhouse gas emissions (Martínez et al., 2005; Akhiroh, and Kiswanto, 2016). Natural carbon emission is a cycle that can be countered by vegetation and the ocean. The benefits of natural carbon emissions help to maintain the earth's temperature at 6°C. Human activity produces industry-related carbon emissions, which thicken carbon dioxide and prevent it from being absorbed by the environment. Because of increased carbon emissions

from equipment, it gets worse than it has since the industrial revolution. The cause of the global warming issue is this state. To control the carbon emissions from an industry, carbon emission disclosure is required. Disclosure of carbon emissions may be made in the annual report or sustainability report. Disclosure of carbon emissions may be mandatory or voluntary. The regulation that requires businesses to publish information about carbon emissions on a regular basis is what makes carbon emission disclosure mandatory. The Carbon Disclosure Project (CDP) is often where carbon emission disclosure is done voluntarily. Investors can evaluate the decrease in carbon emissions and the effects of climate change with the use of carbon emission disclosure. Disclosure of carbon emissions in Nigeria is entirely optional. Carbon emissions are caused by the combustion of hydrocarbon products such as petroleum, carbon gases, and coal, which produce carbon dioxide gases. The Greenhouse gas protocol (GHG protocol) frames carbon emission by locating emission within the scopes of organizational boundaries, which assert they are in charge of and responsible for these emissions (Malamatenios, 2014). The scopes of organizational boundaries include Scope 1 (i.e. direct emissions), Scope 2 (i.e. energy indirect), and Scope 3 (i.e. other indirect). Direct emissions (Scope 1) means company-owned or managed activities that directly release emissions into the atmosphere are called direct emissions. Examples of scope 1 emissions include emissions from combustion in owned or controlled boilers, furnaces, and vehicles; emissions from chemical manufacturing into owned or controlled process equipment. Energy indirect (Scope 2) means emissions from the use of bought electricity; heat, steam, and cooling that are discharged into the atmosphere. These are indirect emissions that are a consequence of the company's activities, but which occur at sources not owned or controlled by the company. Other indirect (Scope 3) refers to emissions that are a result of the company's operations, occur at sources that are not under the company's ownership or control and are not categorized as Scope 2 emissions. Examples of scope 3 emissions are purchased materials or fuels, waste disposal, and business travel using a vehicle not under the firm's ownership or control. Existing studies on carbon emissions disclosure mainly use corporate comments on the carbon disclosure project (CDP) data in place of corporate carbon disclosure. Thus, the participation of companies in the CDP or firm's responses is employed as a stand-in for carbon disclosure (Liu et al., 2017).

2.5. Firm Performance

Making a profit is a business's primary goal. A profitable and productive sector of the economy is better able to withstand adverse effects and contribute to the stability of the whole economy. Profitability is used in this study as a proxy for measuring company financial performance, similar to earlier studies. (Otekunrin et al., 2019; Otekunrin et al., 2020; Otekunrin et al., 2023). Numerous financial measures, such as return on equity (ROE) and return on sales (ROS), can be used to assess a company's profitability. This adopts ROA and ROS as a proxy for firms' profitability and consequently, the firm's financial performance in line with the previous studies that found positive relationship between carbon disclosure and financial performance (Alsaifi et al., 2020; Jaggi et al., 2018; Gunardi, and Milondzo, 2016).

2.6. Hypothesis

There is conflicting empirical evidence regarding the impact of greenhouse gas disclosure on financial performance. Existing research has shown a considerable inverse relationship between financial performance and disclosure of carbon emissions. (Hassan and Kouhy, 2014; Abubakar et al., 2021). Some extant studies found evidence of a non-significant relationship between financial performance and carbon emission disclosure (Freedman and Jaggi, 2005: Choi et al., 2013; Jannah and Muid, 2014). However, some studies have found significant positive correlations (Berthelot and Robert, 2011; Luo et al., 2013). Existing research on the factors influencing disclosures of carbon emissions and finanacial performance is still irresolute and this serves as one of the motivations for this study. Irwhantoko and Basuki (2016) opined that, naturally, businesses are more concerned with their economic performance than their environmental impact. However, being environmentally friendly gives businesses a competitive edge and attracts investors (Okpala and Iredele, 2019). Investors are more interested in ecologically friendly businesses, particularly when considering the possibility of climate change (Berthelot et al., 2012). Since investors take the environment, especially carbon emissions, into consideration, companies with solid corporate governance can increase their financial performance as well as firm value by disclosing their carbon emissions (Luo and Tang, 2016). On the contrary, Hsu and Wang (2013) reveal that the market may react negatively to the disclosure of carbon emissions because it may be bad news for global warming and climate change. It can also demonstrate that companies produce carbon emissions. In this scenario, financial performance, the firm value, the stock price may drop. Because reducing carbon emissions is expensive, investors may view it as an ineffective expense (Ling and Mowen, 2013).

A firm must match its activities with societal norms and boundaries based on legitimacy, stakeholder, and signaling theories. A corporation has an effect on the environment in which it works as a result of how it conducts business. Corporations must provide social and environmental information, such as data on their carbon emissions, in order to demonstrate that they have operated their business responsibly and upheld human rights to live in safety, peace, and prosperity. Disclosure of carbon emissions is a method for gaining legitimacy and public trust. This transparency may help build public confidence and legitimacy in how financial decisions are made, as opposed to environmental costs. Profitable businesses can utilize information disclosure as a response to public pressure on how they generate profits. Their advantages are justified by such environmental information disclosure (Bewley and Li, 2000). According to the signaling theory, businesses might indicate that their intangible assets can help secure future profits through voluntary environmental disclosures (Freedman and Jaggi, 1988). The hypotheses examined in this study are now listed below in null forms, with references to the literature reviewed:

H_{01}: Carbon emission disclosure does not significantly influence the return on equity (ROE) of quoted Nigerian financial services companies

H_{02}: Carbon emission disclosure does not significantly influence the return on sales (ROS) of quoted Nigerian financial services companies

3. METHODOLOGY

The 50 financial service quoted Nigerian Exchange Group firms were employed for this study; however, 12 companies were eliminated due to missing or incomplete annual report data from 2015 to 2020 on the Nigerian Exchange Group (NGX). Thus, the final sample includes 38 quoted Nigerian financial service companies that have entirely published annual reports for the time frame. The two sample t-test was used in this study to assess whether there is a statistically significant difference between the financial performance of listed Nigerian financial services companies that declare on carbon emission and those that do not. A two-sample t-test was performed to determine the relationship between the dimensions of carbon disclosure and the mean return on equity (ROE) and return on sales (ROS) of the listed Nigerian financial service firms utilized in the study.

The general formula for the t-test statistics is stated as:

$$t = \frac{\mu_1 - \mu_2}{S_D} \quad (1)$$

Where μ_1 is the mean of ROE or ROS of a firm that discloses a form of carbon emission and μ_{12} is the mean of ROE or the mean of ROS of a firm that does not disclose the specific form of carbon emission. S_D is the standard deviation. The numerator denotes the sample mean difference and the denominator the sample standard deviation of the sample mean difference. (Xu et al., 2017) The analysis is conducted at 5% level of significance.

3.1. Model Specification

$$ROE_{it} = \propto_1 + \propto_2 DED_{it} + \propto_3 EIED_{it} + \propto_4 OIED_{it} + \propto_5 FSIZE_{it} + \propto_6 LEV_{it} + \propto_7 CAIN_{it} + \propto_8 GRTH_{it} + \varepsilon_{it} \quad (3)$$

$$ROS_{it} = \beta_1 + \beta_2 DED_{it} + \beta_3 EIED_{it} + \beta_4 OIED_{it} + \beta_5 FSIZE_{it} + \beta_6 LEV_{it} + \beta_7 CAIN_{it} + \beta_8 GRTH_{it} + \mu_{it} \quad (4)$$

Where
ROE = Return on Equity = Net Profit after Tax/Total Equity
ROS = Return on Sales = Net income/Total Net Sales
i = 1… N denotes a cross-section index of firms,
t = 1…, T denotes the time-series index.
DED = Direct Emissions Disclosure – scope 1
EIED = Energy Indirect Emissions Disclosure – scope 2
OIED = Other Indirect Emissions Disclosure – scope 3
FSIZE =Firm Size = Logarithms of the net sales i.e., log of (Current period sales - previous period sales)/2
LEV =Leverage = Total debts/total sum of assets.
CAIN =Capital Intensity = Total assets/total sum of net sales
GRTH =Growth rate of revenue i.e. Current period revenue - previous period revenue/previous period revenue

4. RESULTS AND FINDINGS

4.1. Hypothesis One

H_{01}: Carbon emission disclosure does not significantly influence the return on equity (ROE) of quoted Nigerian financial services companies

The Hausman specification test was used to distinguish between fixed and random regression models. The findings in Table 1 show the fixed and random regression model results for the impact of carbon emission disclosure on return on equity. From the result, the Hausman test suggests that the random effect model best suits the data based on the non-significant probability value. The non-significant probability value is >0.05; hence, the result of this study is discussed based on the random regression estimate. The result of the random effect model demonstrates that the variable that significantly influences the return on equity are other indirect emission disclosure -scope 3 (coefficient = 0.416 and probability = 0.087), firm size (coefficient = 0.191 and probability = 0.089), capital intensity (coefficient = 0.000149 and probability = 0.000) and growth (coefficient = −0.0258 and probability = 0.014). The impact of "other indirect emission disclosure" -scope 3 on return on equity is positive and statistically significant. Thus, the null hypothesis (H_{01}) is rejected; that is, carbon emission disclosure significantly impacts the ROE of quoted Nigerian financial services companies. The greater the ROE, the better since all things being equal, high ROE companies will generate more earnings and free cash flow that can be utilized to promote more growth, maintain the company's financial stability, and give cash returns to shareholders (Ahsan, 2012).

This indicates that carbon emission disclosure of quoted Nigerian financial services companies improves financial performance. The carbon emission disclosure that improves the financial performance of quoted Nigerian financial services companies is another indirect emission disclosure, i.e., scope 3 of the accounting scope and boundaries for emission disclosure. This may imply that stakeholders, in particular all investment groups, can be more concerned with issues besides the indirect emissions the company produces; in their eyes, those emissions are not totally under the control and responsibility of the company. In these circumstances, indirect emissions, according to investor groups, do not negatively impact a company's reputation. That is stakeholders, particularly all investment groups, may be interested in matters other than the indirect emissions produced by the company; in their eyes, those emissions are not entirely within the company's control and responsibility. In these situations, the investor groups may believe that indirect emissions do not harm a company's reputation. This result is similar to Velayutham (2014); Liu et al. (2017); Nurlis (2019); Noor et al. (2014) which studies show that carbon emission disclosure has a positive impact on financial performance. However, this result is dissimilar to Ganda and Milondzo (2018), which studies show a negative impact on financial performance. Scope 3 emissions are frequently the largest source of greenhouse gas emissions, accounting for up to 90% of total carbon impact in some cases (Hertwich and Richard, 2008).

The result in the random effect model also shows that firm size improves the ROE of quoted Nigerian financial service companies; thus, with the increase in firm size, ROE improves. Findings in Tables 1 and 2 suggest that an increase in firm size by 1% would increase ROE by approximately (coefficient = 0.191 and probability = 0.089). Firm size is a proxy for social expectation or pressure, which shows the societal expectation for carbon action, thereby having a positive coefficient (Liao et al., 2014).

Table 1: Fixed and random effects regression estimates for the effect of carbon emission disclosure on return on equity

Variables	ROE	
	Fixed effect	Random effect
Direct emission disclosure - scope 1	−0.170 (0.187)	−0.161 (0.211)
Energy indirect emission disclosure - scope 2	−0.167 (0.122)	−0.262 (0.188)
Other indirect emission disclosure - scope 3	0.455 (0.183)**	0.416 (0.243)*
Firm size	0.293 (0.221)	0.191 (0.112)*
LEV	0.235 (0.241)	0.601 (0.429)
CAIN	0.000189 (1.06e-05)***	0.000149 (2.28e-05)***
Growth	−0.0368 (0.0237)	−0.0258 (0.0105)**
Constant	−8.665 (4.603)*	−6.746 (2.365)***
Observations	189	189
R^2	0.140	
Number of ID	37	37
Hausman test: Ho: difference in coefficients not systematic Chi-square (6)=(b-B)'[(V_b-V_B)^(1)](b-B) =3.44 Prob>Chi-square=0.7524 (V_b-V_B is not positive definite)		

***P<0.01, **P<0.05, *P<0.1. Robust SEs in parentheses. Source: Researchers compilation, 2022. ROE: Return on equity, SEs: Standard errors, CAIN: Capital intensity, LEV: Leverage

Table 2: Random effect regression (return on equity)

			Robust		
ROE	Coefficient	SE	Z	P>|Z|	95% CI
Scope 1	−0.160784	0.2114918	−0.76	0.447	−0.5753002–0.2537323
Scope 2	−0.2622146	0.1877961	−1.40	0.163	−0.6302882–0.105859
Scope 3	0.415685	0.2429809	1.71	0.087	−0.0605489–0.8919188
Firm size	0.1906228	0.1120256	1.70	0.089	−0.0289433–0.4101889
LEV	0.6012134	0.4294899	1.40	0.162	−0.2405713–1.442998
CAIN	0.000149	0.0000228	6.54	0.000	0.0001043–0.0001936
Growth	−0.0258027	0.0105004	−2.46	0.014	−0.0463832–0.0052222
Constant	−6.74558	2.364628	−2.85	0.004	−11.38017–2.110994

Source: Researchers compilation, 2022. SE: Standard error, CI: Confidence interval, ROE: Return on equity, LEV: Leverage, CAIN: Capital intensity

Findings in Tables 1 and 2 also show that an increase in capital intensity of firms by 1% would increase ROE by approximately (coefficient = 0.000149 and probability = 0.000). Capital intensity indicates a company's efficiency in the employment of its assets. The higher the intensity of capital employed, the higher the financial performance. Thus, the increase in capital intensity increases financial performance. This is similar to Nangih et al. (2020). Findings show that a decrease in firm growth by 1% would decrease ROE by approximately (coefficient = −0.0258 and probability = 0.014). The sales growth rate demonstrates the capability of a company's sales team to increase revenue over a fixed time.

Thus, the result shows a decrease in the capability of the sales team of quoted Nigerian financial companies to increase revenue over time. Thus, the null hypothesis ($\mathbf{H_{01}}$) is rejected; that is, carbon emission disclosure significantly impacts the ROE of quoted Nigerian financial services companies. This signals that carbon emission disclosure impacts the return on equity of quoted Nigerian financial companies. The signaling theory supports this finding as Companies receive signals from organizational green pressures from interested parties to adopt behaviors that fulfill such environmental needs. (Ganda and Milondzo, 2018). Businesses are motivated to share confidential information since doing so can be seen as a sign of success and reduce information asymmetry. It promotes a positive reputation and helps connect with possible investors (Kurnia et al., 2020). However, disclosure of carbon-related matters can be used as "greenwashing" to promote the company's image (Rohani et al., 2021).

4.2. Hypothesis Two

H_{02}: Carbon emission disclosure does not significantly influence the return on sales (ROS) of quoted Nigerian financial services companies

Fixed and random regression models were distinguished using the Hausman specification test. The findings in Table 3 show the fixed and random regression model results for the impact of carbon emission disclosure on return on sales. From the result, the Hausman test suggests that the random effect model best suits the data based on the non-significant probability value. The non-significant probability value is >0.05; hence, the result of this study is discussed based on the random regression estimate. A random effect model's output shows that the variable that significantly influences the return on sales are other indirect emission disclosure -scope 3(coefficient = 0.790 and probability =0.001), firm size (coefficient = −0.395 and probability = 0.053), capital intensity (coefficient =0.000194 and probability =0.001) and growth (coefficient = 0.0360 and probability = 0.073). The impact of other indirect emission disclosure -scope 3 on return on sales is positive and statistically significant. The result shows that firms with other indirect emission disclosure -scope 3 have a higher return on sales than firms that do not disclose other indirect emissions. Thus, the ROS of quoted Nigerian financial services companies

disclosing scope 3 is about 0.79% higher than firms that do not disclose other indirect emissions. An increasing ROS indicates that a company is growing more efficiently; all other things being equal, ROS reflects customers' assessments of organizations' efforts, which happens when people respond positively to a firm's efforts. The demand for the firm's products will increase, resulting in increased sales. This indicates that carbon emission disclosure of quoted Nigerian financial services companies improves financial performance. The carbon emission disclosure that improves the Listed Nigerian financial services firms' financial performance companies is 'other indirect emission disclosure,' i.e., scope 3 of the accounting scope and boundaries for emission disclosure. This result is similar to Busch and Lewandowski (2017), which studies show that carbon emission disclosure positively impacts return on sales. However, this result is dissimilar to Ganda and Milondzo (2018), which research indicates a detrimental effect on financial performance.

The result in the random effect output also shows that firm size improves the ROS of quoted Nigerian financial service companies; thus, with the increase in firm size, ROS improves. Findings in Tables 3 and 4 suggest that a 1% increase in business size would raise ROE by approximately (coefficient = −0.395 and probability = 0.053). Firm size is a proxy for social expectation or pressure, which shows the societal expectation for carbon action, thereby having a positive coefficient (Liao et al., 2014). This result is similar to (Hermawan et al., 2018), which shows a positive association between firm size and financial performance. Findings in Tables 3 and 4 also show that an increase in capital intensity of firms by 1% would increase ROS by approximately (coefficient = 0.000194 and probability = 0.001). Capital intensity indicates a company's efficiency in the employment of its assets. The higher the intensity of capital employed, the higher the financial performance. Thus, the increase in capital intensity increases financial performance. This result is similar to Nangih et al. (2020). Findings show that an increase in firm growth by 1% would decrease ROS by approximately (coefficient = 0.0360 and probability = 0.073). The sales growth rate demonstrates the capability of a company's sales team to increase revenue over a fixed time. Thus, the result shows an increase in the capability of the sales team of quoted Nigerian financial companies to increase revenue over time. Thus, the null hypothesis (H_{01}) is rejected; that is, carbon emission disclosure significantly impacts the ROS of quoted Nigerian financial services companies. This result supports signaling theory, where companies disclose their good performance, distinguish themselves from the public, and reduce information asymmetry, enhancing their reputation and public opinion (Joseph and Mshelia, 2015). This result also suggests that some of the quoted Nigerian financial services firms consider the legitimacy theory, which explains that companies no longer focus on profit-making as the sole objective of the firm but also pay great attention to their environment in doing business. As explained by Srivastava and Hopwood (2009), even though increased transparency regarding environmental issues can be

Table 3: Fixed and random effects regression estimates for the effect of carbon emission disclosure on return on sales

Variables	ROS	
	Fixed effect	Random effect
Direct emission disclosure - scope 1	−0.286 (0.291)	−0.384 (0.257)
Energy indirect emission disclosure - scope 2	−0.318 (0.207)	−0.0338 (0.268)
Other indirect emission disclosure - scope 3	0.952 (0.269)***	0.790 (0.229)***
Firm size	−0.848 (0.342)**	−0.395 (0.204)*
LEV	−0.929 (1.147)	−0.459 (0.710)
CAIN	0.000175 (5.45e-05)***	0.000194 (5.81e-05)***
Growth	0.0893 (0.0364)**	0.0360 (0.0201)*
Constant	16.43 (7.138)**	6.729 (4.154)
Observations	187	187
R^2	0.303	
Number of ID	37	37
Hausman test: Ho: Difference in coefficients not systematic Chi-square (6)=(b-B)'[(V_b-V_B)^(-1)](b-B) =8.82 Prob>Chi-square=0.1842 (V_b-V_B is not positive definite)		

***P<0.01, **P<0.05, *P<0.1. Robust SEs in parentheses. Source: Researcher compilation, 2022. ROS: Return on sales, CAIN: Capital intensity, LEV: Leverage, SEs: Standard errors

Table 4: Random effect regression (return on sales)

		Robust			
ROS	Coefficient	SE	Z	P>|Z|	95% CI
Scope 1	−0.3843565	0.2569242	−1.50	0.135	−0.8879187–0.1192058
Scope 2	−0.0338431	0.2684664	−0.13	0.900	−0.5600275–0.4923414
Scope 3	0.7897318	0.2290908	3.45	0.001	0.340722–1.238742
Firm size	−0.394789	0.2037236	−1.94	0.053	−0.7940799–0.0045019
LEV	−0.4590384	7095029	−0.65	0.518	−1.849639–0.9315618
CAIN	0.0001935	0.0000581	3.33	0.001	0.0000797–0.0003074
Growth	0.035962	0.0200906	1.79	0.073	−0.0034147–0.0753388
Constant	6.729092	4.15397	1.62	0.105	−1.412539–14.87072

Source: Researchers compilation, 2022. ROS: Return on sales, LEV: Leverage, CAIN: Capital intensity

beneficial, there is a chance that such disclosures made in the name of corporate legitimacy could skew stakeholders' perceptions of those companies' behavior rather than genuinely attempting to lessen environmental harm.

As a result, disclosure of carbon emissions has an impact on financial performance, proving that being green is profitable. However, direct emission disclosure -scope 1 and energy indirect emission disclosure- scope 2 is not significantly related to return on sales. This implies that customers do not value these forms of carbon emission disclosure, or such information may not be sufficient to send a clear message to stakeholders; thus, stakeholders may not be able to interpret the disclosed information regarding these forms of carbon emission disclosure. This is consistent with institutional investors' findings that quantitative and qualitative carbon-related disclosure could be more precise and informative.

This study used secondary data as its source and employed the ex-post factor research design. The secondary data was employed from the annual report of selected quoted Nigerian financial companies. The conventional panel data method of the fixed and random effect model examined the effect of carbon emission disclosure on return equity and sales of Nigerian quoted financial services companies. Findings show that the variable that significantly influences the return on equity is other indirect emission disclosure -scope 3. The impact of other indirect emission disclosure - scope 3 on return on equity is also positive and statistically significant. The outcome of the random effect model shows that the variable that significantly influences the return on sales is other indirect emission disclosure -scope 3. The impact of other indirect emission disclosure -scope 3 on return on sales is positive and statistically significant.

5. CONCLUSION

This study examined the impact of carbon emission disclosure on the financial performance of quoted Nigerian financial services companies. It was discovered that other indirect emission disclosure – scope 3 has a positive and significant effect on financial performance proxied by returns on equity and returns on sales. Direct emission disclosure – scope 1 and energy indirect emission disclosure – scope 2 do not significantly affect the financial performance of quoted Nigerian financial service companies. This study concluded that carbon emission disclosure significantly influences the return on equity of the selected quoted Nigerian financial services companies. Also, the study concluded that carbon emission disclosure significantly influences the return on sales of the selected quoted Nigerian financial services companies.

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