



IMPACT OF ENVIRONMENTAL, SOCIAL AND GOVERNANCE DIMENSIONS OF CORPORATE SOCIAL RESPONSIBILITY ON FIRM PERFORMANCE: EVIDENCE FROM NIGERIA

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ABSTRACT

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The scarcity in literature of clear-cut methods and techniques used in determining the impact of corporate social responsibility (CSR) on a firm's performance has led to mixed results. The most current empirical studies employed diverse CSR measures as well as performance measures. This study aims to examine the effect of CSR on the performance of oil and gas companies in Nigeria using the Thomson Reuter index as a measure of CSR and price-cost margin in addition to return on assets (ROA) and earnings per share (EPS) as measures of performance. Annual panel data from 55 oil companies for the period 2010–2019 operating in upstream, midstream, and oil-servicing activities were used. Findings revealed a negative non-significant relationship between CSR and price-cost margin (PCM) of the firms under study. These findings support the shareholder theory, which hypothesizes that the corporate social responsibility of the citizens is solely the responsibility of the government and that the responsibility of firms is profit-making. Mixed results of negative non-significant and positive significant relationships were recorded between CSR and ROA. This result also supports the stakeholder theory, which emphasis shareholders' interest in all aspects of business operation. The corporate social performance (CSP) dimension correlates with the true nature of the Nigerian economy where firms make donations to communities and erect buildings for health and education purposes. A positive non-significant correlation was reported between CSR and earnings per share. There is room for improvement regarding performance and this can be achieved by increasing the CSR scores. Failure to do so may lead to a crisis which may inevitably affect performance.

Contribution/Originality: This study is one of the few studies that adopted the Thomson Reuter index as a measure of CSR and price-cost margin as a measure of a firm's performance. The modern econometric panel data technique was also adopted to expand and improve on the empirical analyses already conducted in Nigeria.

1. INTRODUCTION

Corporate social responsibility (CSR) has increased its relevance in more recent times. Ethics, sustainability, and environmental and social responsibility-related issues are being added to the more archetypal economic and profit-making objectives of companies. This indicates important changes in the way business is being thought of (Kim, Kim, and Qian (2018).

Subsequent to the increasing need for CSR, many companies in the oil and gas industry have been involved extensively in CSR concerns in recent years. An increase in issues that relate to the environment in which businesses operate has led many scholars to query the effectual application of ethical and sustainable actions within companies and the impact this may have on the firm's reputation and financial performance (FP) (Aroh et al., 2010; Bresciani & Ferraris, 2016; Cairns, De Andrade, & Landon, 2016; Del Giudice et al., 2017; Herbert, Nwaorgu, Onyilo, & Iorombagah, 2020; Jones, Comfort, Hillier, & Eastwood, 2005; Muzurura, 2019; Souza-Monteiro & Hooker, 2017).

High-ranking studies in this area have argued about the responsibility of businesses to satisfy, legitimize, and improve corporate financial performance (CFP). Interestingly, many companies have achieved such functions by harmonizing social performance initiatives with key corporate strategic decisions (Aliyu & Noor, 2015). This is essential as corporate performance is evaluated using both the traditional (economic) performance indicators and the extent of commitment to social and environmental performance (Aguilera, Rupp, Williams, & Ganapathi, 2007).

Globally, a component of the continuous novelty in corporate governance (CG) reforms is the improvement in social and environmental compliance by corporations (Strandberg, 2005).

A well-structured CG framework will go a long way in helping to mitigate the reoccurrence of global financial crises, such as those in East Asia in the late nineties and the American corporate scandals such as the case of Enron, World.com, and Andersen in 2001–2002 (NCG/CSRA, 2009; Strandberg, 2005). Well-structured CG and CSR frameworks will also make certain that corporations take steps, as good corporate citizens, to improve human rights, social responsibility, and environmental sustainability (Aliyu & Noor, 2015). In addition, Munisi and Randøy (2013) stipulated that companies across sub-Saharan Africa partially execute good CG practices.

The development of CG practices in Nigeria has become a crucial point in recent years (NCG/CSRA, 2009). The collapse of some banks in Nigeria in the early 1990s and the pension scandal in 2004 prompted the dynamic development of CG to endorse good governance and social responsibility practices in the country.

This has led to an intense debate concerning the convergence of CG and CSR that can bring about accountability and transparency for investors, communities, employees, suppliers, customers, and other stakeholders (Aliyu & Noor, 2015). To encourage ethical and responsible decision-making, a large percentage of Nigerian listed companies have established codes of ethics and statements of business practices in accordance with Nigerian code. Despite these efforts, a report stated that Nigerian companies have shortcomings in applying social responsibility to stakeholders largely due to weak legal processes for redressing corporate wrongdoings or crimes (NCG/CSRA, 2009).

Through the National Economic Empowerment Development Strategies (NEEDS), the government of Nigeria included social responsibility and nation-building to the role of corporations. This made it clear that organizations need to be more practical in job creation, enhancing productivity, and improving the quality of lives through investing in corporate and social development plans in the country (National Planning Commission, 2004). It is worth mentioning that CSR in Nigeria is not a new idea.

Before the period of western organized CSR, and the overbearing influences on business practices of the indigenous firms, some Nigerian business enterprises had implemented crude CSR without any prompts from other countries. Generally, it was believed that ethnicity, language, and religion were the main contexts that shaped Nigerian business practices and provided a vehicle for indigenous CSR. A common drift among diverse ethnic groups implies that CSR discourse is the common philosophy of life, and the concept of extended kinship appears

deep-rooted in all the ethnic groups in Nigeria. They see the family network as very important and most ethnic groups believe that individual responsibility extends beyond the boundaries of the immediate family. This practice is seen as Nigeria's form of social responsibility; it is an indigenous style of the rich connecting with the less privileged in society.

When gestures of this kind are offered on behalf of business organizations, they are referred to as extended kinship responsibility. This native form of CSR existed in virtually all the ethnic groups in Nigeria before the importation of the western concept of CSR (Sergio & Martí-Ballester, 2017). When Nigeria started practicing CSR, it was not as well developed compared to that of the Western world. This is mainly due to weak enforcement, low level of awareness, and shareholders' conservative thinking (Aliyu & Noor, 2015).

Therefore, dedication to social and environmental activities is just a matter of satisfying the minimum legal requirements (Micah, Esq, & Adebayo, 2012). Corporate social responsibility depicts the ability of companies to be socially responsible for growth and development in society. It emphasizes that organizations have a duty to consider the interests of all stakeholders as well as the environment in all aspects of their operations (Berkowitz, Kerin, Hartley, & Rudelius, 2000; Rondinelli & Vastag, 1996), and it denotes corporate commitments to social and environmental practices (Aliyu & Noor, 2015). The relevance of CSR, however, has increased drastically over the years within organizations (Kim et al., 2018). By implication, ethical sustainability and related social responsibility issues are being added to the more classic economic and profit-making objectives of corporations. This shows an important change in the way businesses think (Kim et al., 2018).

However, the continual corporate failures in taking responsibility for the needs of relevant stakeholders, especially communities, have created gaps for more research into CSR activities in Nigeria to offer updated insight on the ongoing debate on the relationship between CSR and corporate financial performance (David, 2012).

Most of the previous studies on CSR in Nigeria focused on the manufacturing sector, banking sector, and some other sectors not related to the oil and gas sector. However, a small number of studies have been done on oil and gas companies as well (Abdulaziz, 2018; Ehioghiren & Eneh, 2019; Odunayo & Ibidolapo, 2018; Ohiokha, Odion, & Akhalumeh, 2012; Stephen & Rebecca, 2018; Yushau & Mercy, 2018). Most of these studies focused on the social dimension of CSR, while the environmental and corporate governance dimensions were neglected. Again, most studies in Nigeria used net profit margin as a measure of firm performance, but this study adopted the price-cost margin because indicators based on net profit margin might be misleading as they are after tax adjustments. This study differs from previous studies as it applies environmental performance (EP), corporate governance performance (CGP) and corporate social performance (CSP) as measures for CSR, and price-cost margin as an additional measure of a firm's performance to investigate the effect of CSR on the performance of the selected oil and gas companies.

The modern econometric panel data technique was also adopted to expand and improve on the empirical analysis already conducted in Nigeria. This was necessary as the panel data allows for an unbiased and efficient estimation; however, most studies in Nigeria predominantly used the linear regression model. Again, many studies carried out in this context revealed different opinions and results on the impact of CSR on performance. Some say that CSR has a positive impact on financial performance (FP), some say that CSR has a negative impact on financial performance, while other studies revealed a neutral (inclusive) impact.

The relationship between CSR and FP has been well investigated and developed in the already existing literature that was carried out mostly in developed countries. However, this study was carried out in Nigeria to discover the school of thought it will fall into. Therefore, we set the objectives of the study to investigate the impact that these dimensions of CSR have on the performance of the oil and gas companies using panel data analysis.

2. LITERATURE REVIEW

The concept of CSR has been conceived by different people in different ways, but generally, CSR demonstrates activities that communicate business obligations to all constituent stakeholders (Votaw, 1973). A famous contributor of CSR initiatives (Bowen, 1953) construes CSR as business intent and programs which have a positive impact on societal values and norms. Backman (1975) considers social responsibility as part of those objectives crafted or intentionally integrated by a business that are not directly related to the economic objectives of the business but are intended to address some negative external factors that improves a company's conditions and people's quality of life. The most used definition of CSR is the one proposed by the Commission of the European Communities Brussels (2001), which construes CSR as "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis", and in this study we use this definition.

2.1. CSR and FP

Different people have conceived the notion of CSR in different ways. In general, CSR shows activities that communicate the business commitment to all constituent stakeholders (Votaw, 1973). Bowen (1953) a prominent contributor of CSR idea interprets CSR as business intention and programs which have a positive impact on societal values and norms. Backman (1975) stipulates that CSR is part of those objectives deliberately incorporated by businesses that are not directly linked to the economic objectives; profit of the company but are planned to attend to some negative external factor that improves company's conditions and quality of life of people. A well-known definition of CSR is the one proposed by the Commission of the European Communities Brussels (2001) which interpret CSR as "a notion whereby companies incorporate social and environmental concerns in their business operations and in their communication with their stakeholders on a voluntary basis". We follow the direction of this definition.

The shareholder theory hypothesizes that the social welfare of citizens is the responsibility of the government. Milton (1970) stipulates that the social responsibility of businesses is to increase profits and not to make provisions for the welfare of citizens. Freeman (1984) propounded the stakeholder theory. He opposed the shareholder theory and hypothesized that businesses must consider the stakeholders in all aspects of their operations. As it relates to business ethics, the stakeholder theory appears to oppose the claims of corporate managers. The Sustainable Development Theory, driven by Al Gore, focuses on business development and longevity in a stable social environment. It emphasizes the need for businesses to continually support the process of economic growth, the future of the environment, and other social benefits in agreement with this idea. Nevertheless, Jensen (2002) proposed that the stakeholder theory is consistent with the long-term maximization of businesses. Anyakudo (2016) stresses that the stakeholder theory is the view of capitalists and emphasizes the relationships between a business and its customers, suppliers, employees, investors, communities and others who have a stake in the business. The stakeholder theory is essential because it highlights the basis for the interface of other disciplines and influences on a business.

It suggests that businesses should consider stakeholders as important rather than a remote factor; it elevates stakeholders to a level of importance which shareholder theorists do not agree with.

Table 1 presents empirical studies conducted both in Nigeria and internationally on CSR and firms' performance.

Table 1. Empirical review.

Author	Objective	Methodology	Sector	CSR Measure	Finding/Result
Positive Results					
Agbiogwu, Ihendinihu, and Okafor (2016)	Environmental and social costs on performance	T-test	Manufacturing	Corporate donations and charitable activities	Positive effects of environmental and social cost on net profit margins, earnings per share, and return on capital employed
Wekesa (2017)	Relationship between corporate social responsibility activities and financial performance	SPSS and Excel Spreadsheet	Entertainment	Donations	An insignificant positive relationship between CSR and financial performance indicators
Sergio and Martí-Ballester (2017)	Relationship between corporate environmental performance	Petersen's approach	Firms within and outside Africa	Company reports, filings and websites, NGO websites, CSR reports, and media outlets.	Environmental practices significantly and positively affected
Alexander, Marylyn, and Kingsley (2017)	Causality between corporate social responsibility and firm financial performance.	Regression	Manufacturing	Donations	Mutual relationship between CSR and performance
Okegbe and Egbunike (2016)	Relationship between corporate environmental performance	Multiple regression	Quoted companies in Nigeria	Donations and charitable activities	Positive relationship with corporate social responsibility
Negative Results					
Malarvizhi and Ranjani (2013)	The link between corporate environmental disclosure and firm performance	Regression	Selected companies	Disclosure Index	No significant relationship between environmental disclosure and firm performance
Wu, Liu, and Sulkowski (2010)	Environmental disclosure, firm performance	Regression	Firms selected	Disclosure Index	A negative relationship with performance
Banele (2016)	CSR, profitability	Vector auto regression (VAR)	Telecommunication	Cost disclosed	No causal relationship between corporate social responsibility and profitability
Mixed Results					
Joseph and Okafor (2016)	CSR on performance using earnings per share as a measure of performance	Regression	Banking	Corporate donations and charitable activities	A negative relationship with EPS and DPS and a positive relationship with return on capital employed (ROCE)
Ohiokha et al. (2012)	Corporate social responsibility on firms' financial performance	Panel regression	Random selection	Donations	CSR has a weak impact on performance (earnings per share)

Mahmoud (2017)	Relationship between corporate social responsibility (CSR) and corporate performance	Panel least squares	Manufacturing	Donations and workers' welfare	The donation has a negative effect on performance while workers welfare has a positive effect on performance
Bala and Abdulrazaq (2017)	Financial performance on CSR	Multiple Regression	Banking	Donations and workers' welfare	Positive and negative effects on CSR
Inconclusive Results					
Maria-Gaia (2009)	Relationship between corporate social responsibility (CSR) and performance	Analytical ratings and utilizing a global rating	Banking	Donation	No statistically significant link indicating any positive or negative correlation between CSP and CFP
Yusuf and Ahmed (2015)	CSR on performance	Regression	Firms in UK	Donation	No significant positive effect
Qiu, Shaukat, and Tharyan (2014)	The link between a firm's environmental and social disclosures and profitability	Regression	Sampled firms	Disclosure Index	No association between the variables
Maria-Gaia (2009)	Relationship between corporate social and performance	Analytical ratings and utilizing a global rating	Banking	Disclosure Index	No link between CSR and performance

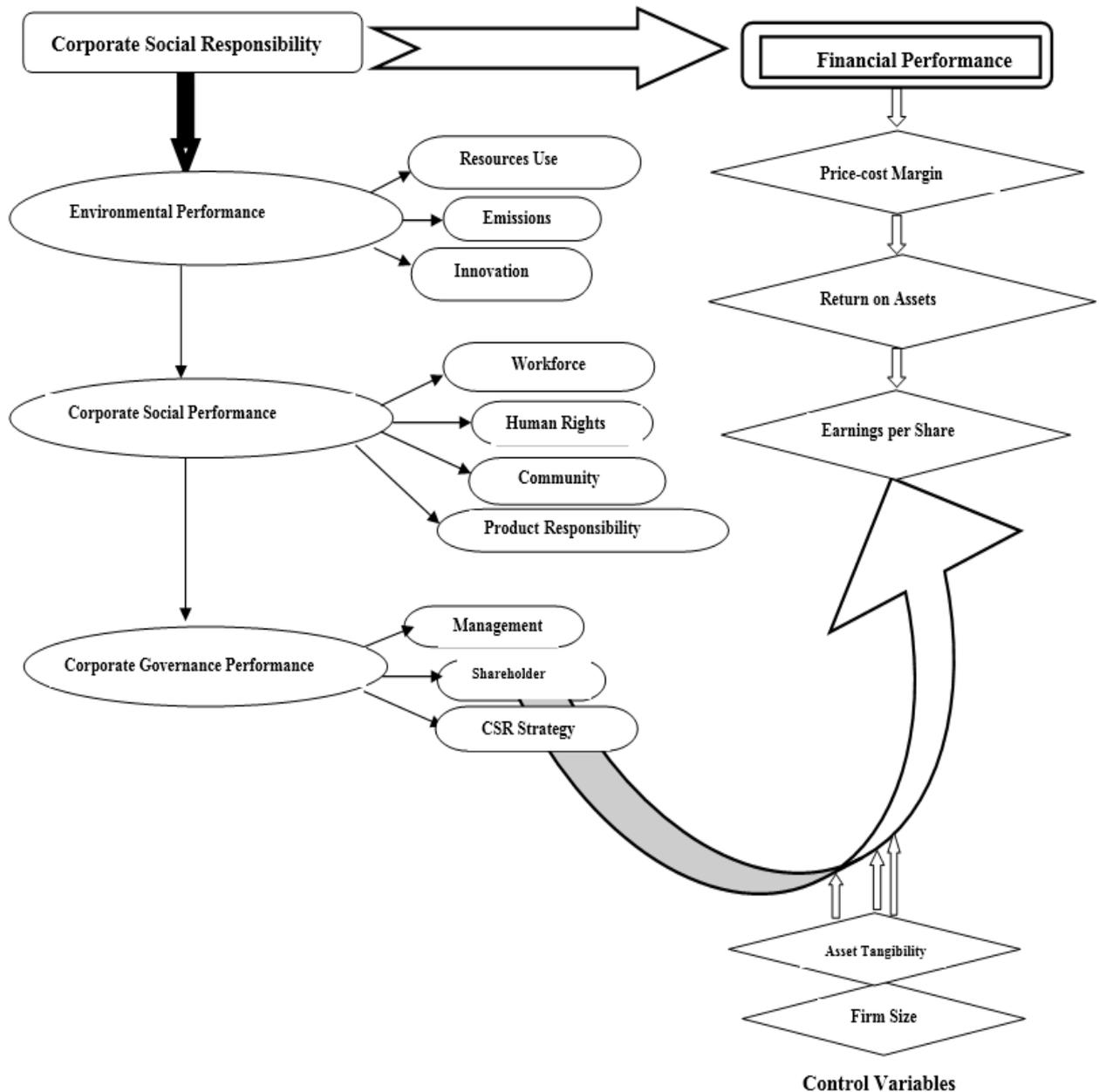


Figure 1. Conceptual framework.

Figure 1 shows the connection between CSR and firm performance and the impact of CSR on firm performance.

2.2. Brief History of CSR

Management of most organizations before the 20th century saw a firm's performance as a function of return on capital employed (ROCE), return on equity (ROE), and profitability (Yusuf & Ahmed, 2015) and corporate social responsibility was seen exclusively as the duty of the government.

After the introduction of the western concept of corporate social responsibility, many corporations, including multinational corporations, started operating in Nigeria. They were involved in the exploration of resources and carrying on businesses for profitability. Currently, multinational corporations dominate the major sectors of the Nigerian economy. These include oil and gas corporations, manufacturing, petrochemicals, and construction firms. Some of the prominent among them are Shell Petroleum Development Company (SPDC), Chevron Oil & Gas, Mobil Oil & Gas, and Total.

In Nigeria, the most active sector is the oil industry. This is where the Nigerian government derives more than 80% of its revenue from. The sector is flooded with big players such as Shell, Chevron, Texaco, Exxon Mobil, and Agip that have extended business activities across overseas, and, as a result, one would expect a high level of CSR extended to the host communities.

In the past, the government and the oil companies in Nigeria had not considered the principles and practices of corporate social responsibility. This is evident in the provision of some laws in the nation. An example of such laws is the Companies and Allied Matters Acts (CAMA). CAMA contains 613 sections and did not make provisions for CSR on companies registered in Nigeria. The majority of the laws regulating exploration of petroleum resources, such as the Petroleum Act and the Mineral and Mining Act, did not make any laws regarding CSR, rather these laws provided guidance on licenses, leases, contractual arrangements for the exploration and production of petroleum and other minerals, and payment of royalties. No thought was given by the oil and gas companies to the principles and practices of CSR. The host communities were therefore at loss as their land was being exploited and they received nothing in return, not even environmental protection.

The government of Nigeria also enacted certain laws to solve the problems of environmental issues and corporate social responsibility. For example, the Federal Environmental Protection Agency Act, the Environmental Impact Assessment Act, and the Oil Pipeline Act have made provisions for environmental protection and the liability of operators for harm caused by disposing of hazardous substances in the environment. Another legislature that attempted to make provisions for CSR is the Niger-Delta Development Commission, which states that oil companies and gas processing companies must contribute 3% of their total annual budget to the Niger-Delta Development Commission fund for the development of the region. Apart from some of these provisions being mentioned in a few legislations, there are no serious provisions in these laws or government policies stipulating how the government and oil companies should develop the communities where the oil companies carry out their activities.

2.3. Contribution to Knowledge

The lack of clear-cut methodology and techniques used in determining the impact of CSR on a firm's performance has led to many mixed results. Most present-day empirical studies employed diverse CSR measures; Agbiogwu et al. (2016) adopted the amount disclosed in financial statements as a measure of CSR and reported a positive result of CSR on performance; Odunayo and Ibidolapo (2018) adopted the use of questionnaires and reported a positive significant effect on performance; Ajide and Aderemi (2014) adopted the KLD index as a measure of CSR and reported a positive result of CSR on profitability; Joseph and Okafor (2016) used corporate donation and charity as proxies for CSR and reported mixed results of both positive and negative effects of CSR on performance. Wu et al. (2010) used the disclosure index and reported a negative performance result. As a measure of performance, the study adopted the price-cost margin measure in addition to ROA and EPS because indicators based on net profit, which are mostly used in Nigeria, might be misleading as they are after tax adjustments (Abdulrahman, 2013); (Odetayo, Adeyemi, & Sajuyigbe, 2014); (Abiodun, 2012); (Amole, Adebiyi, & Muyideen, 2012) and Nnenna and Carol (2016). To expand the frontier of knowledge of other empirical studies in Nigeria, this study engaged environmental performance, corporate governance performance in addition to social performance as measures of CSR, hence the adoption of the Thomson Reuter Index and price-cost margin in addition to ROA and EPS as measures of a firm's performance. Thomson Reuter's environment, social, and governance performance (ESG) scores were transparently and objectively designed to measure a company's performance using ten bases via emissions, product innovation, human rights, shareholders, resource use, workforce, community, product responsibility, management, and CSR strategy. This was prepared based on a company's reported data and it cut across the world. Table 2 shows the scores for the different categories of ESG scores.

Table 2. Thomson Reuter indices for social, environmental, and corporate governance performance.

Pillar	Category	Scoring	Weight
Environmental performance	Resources use	19	11%
	Emission	22	12%
	Innovation	20	11%
Social performance	Workforce	29	16%
	Human rights	8	4.50%
	Community	14	8%
	Product responsibility	12	7%
Governance performance	Management	34	19%
	Shareholders	12	7%
	CSR strategy	8	4.50%
Total		178	100%

3. METHODOLOGY

The study's population comprises 140 oil and gas companies operating in Nigeria as of 2019. Using the non-probability sampling technique, a sample size of 55 companies was made judgmentally. To achieve the objective of this study, content analysis was used to collect and collate panel data from the annual report of the sampled companies covering a period of ten years from 2010 to 2019. The factors considered when selecting the sample size include the availability of the company's financial statement for the period under study and involvement of the companies in upstream, midstream, and oil servicing activities because it is believed this is where issues of environmental degradation are most noticeable.

The study adopted the panel least squares of either the random effects model or the fixed effects model to analyze the impact of CSR on the firms' performance. The study adopted environmental performance, corporate governance performance, and corporate social performance as measures of CSR, and price-cost margin (PCM), return on assets, and earnings per share as measures of performance. The PCM is calculated as follows:

PCM = value added – labor cost divided by sales.

$$\frac{\text{Value added} - \text{labor cost}}{\text{Sales}}$$

Value added is calculated by subtracting sales from the cost of external suppliers, that is cost of inventories, services, energy, and fuels, minus labor cost. Firm size and asset tangibility were used as control variables as they are considered as important determinants of a firm's performance. In most research, some variables can influence the dependent variable and, as a result, inferences made may not be reliable if they are not captured.

The functional relationship between corporate social responsibility and a firm's performance is shown below:

$$Y_{i-t} = \beta_0 + \beta_1 x_{i-t} + \beta_2 x_{i-t} + \beta_3 z_{i-t} + \mu_i \quad (1)$$

$$Y_{i-t} = \beta_0 + \beta_1 (\text{CSPOGC}_{i-t}) + \beta_2 (\text{EPOGC}_{i-t}) + \beta_3 (\text{CGPOGC}_{i-t}) + \beta_4 (\text{LOGFSIZ}_{i-t}) + \beta_5 (\text{ATAN}_{i-t}) + \mu_{i-t} \quad (2)$$

Model 1

$$\text{PCM}_{i-t} = \beta_0 + \beta_0 + \beta_1 (\text{CSPOGC}_{i-t}) + \beta_2 (\text{EPOGC}_{i-t}) + \beta_3 (\text{CGPOGC}_{i-t}) + \beta_4 (\text{LOGFSIZ}_{i-t}) + \beta_5 (\text{ATAN}_{i-t}) + \mu_{i-t} \quad (3)$$

Model 2

$$\text{ROA}_{i-t} = \beta_0 + \beta_0 + \beta_1 (\text{CSPOGC}_{i-t}) + \beta_2 (\text{EPOGC}_{i-t}) + \beta_3 (\text{CGPOGC}_{i-t}) + \beta_4 (\text{LOGFSIZ}_{i-t}) + \beta_5 (\text{ATAN}_{i-t}) + \mu_{i-t} \quad (4)$$

Model 3

$$\text{EPS}_{i-t} = \beta_0 + \beta_0 + \beta_1 (\text{CSPOGC}_{i-t}) + \beta_2 (\text{EPOGC}_{i-t}) + \beta_3 (\text{CGPOGC}_{i-t}) + \beta_4 (\text{LOGFSIZ}_{i-t}) + \beta_5 (\text{ATAN}_{i-t}) + \mu_{i-t} \quad (5)$$

Where:

Y_{i-t} = Dependent variable.

β_0 = Intercept of the equation.

$\beta_1 - \beta_6$ = Coefficient of explanatory variable.

X_{i-t} = Independent variable.

I = Cross-section variable.

t = Time period.

μ = Error term.

Estimation procedure: The estimation process follows a set of pre-estimation tests, diagnostics tests, and panel estimation tests.

Estimation technique: The choice of the ordinary least squares (OLS), fixed effects, and random effects regression models were dependent on the Hausman test conducted on the panel data.

4. DATA ANALYSIS AND RESULTS

Based on the data from the published financial statements of the companies between 2010 and 2019, 550 observations were obtained.

4.1. Descriptive Statistics

The descriptive statistical analysis gives a general description of the research variables. Table 3 shows the statistics result of each variable.

Table 3. Descriptive statistics.

	PCM	ROAOGC	EPSOGC	CSPOGC	EPOGC	CGPOGC	LOGFSIZE	ATAN
Mean	1.477658	15.04242	6.746938	3.843084	3.903810	4.020458	18.09212	0.670815
Median	0.124121	2.265706	2.470000	4.127134	3.891820	4.025352	17.98132	0.643046
Maximum	53.99585	2543.053	149.3500	4.369448	4.219508	4.304065	21.72636	13.73629
Std. Dev.	5.275494	175.2972	15.02962	0.556996	0.153899	0.118075	1.171083	1.070569
Skewness	6.694429	14.38438	6.353463	-1.136143	-1.075861	-1.043702	0.608652	9.632849
Kurtosis	56.18776	207.9420	52.47817	2.526357	9.106021	6.284143	4.015934	111.3833
Jarque-Bera	26321.74	374752.6	22724.88	47.14170	366.7422	132.5000	21.99706	106033.4
Observations	550	550	549	550	550	550	550	550

Table 4. Pearson's correlation matrix among the variables.

	PCM	ROAOGC	EPSOGC	CSPOGC	EPOGC	CGPOGC	LOGFSIZE	ATAN
PCM	1.000000							
ROA	0.7840	1.000000						
EPS	0.8578	0.6701	1.000000					
LOGCSPOGC	0.0099	0.5399	0.5825	1.000000				
LOGEPOGC	0.0237	0.2626	0.1327	0.3193	1.000000			
LOGCGPOGC	0.1948	0.8708	0.6898	0.4404	0.3331	1.000000		
LOGFIRMSIZ	0.0153	0.2328	0.1491	0.1361	0.0557	0.1276	1.000000	
ATAN	0.0326	-0.9152	0.4566	0.4386	0.2054	0.7405	0.0204	
	0.5515	0.7442	0.3775	0.0555	0.2544	0.0516	0.0659	1.000000

Tables 3 and 4 show the descriptive statistics and Pearson's correlation matrix of the variables, respectively. Regarding the firms' performance, the mean of PCM is 1.478, the standard deviation is 5.275, and the skewness is 6.694. The mean of ROAOGC is 15.042 and the standard deviation is 175.297, while skewness is 14.384. For EPSOGC, the average mean is 6.747, the standard deviation is 15.029, and the skewness is 6.353. Meanwhile, the CSPOGC, EPOGC and CGPOGC scores, which range from 1–100, have average outcomes of 3.843, 3.904 and 4.020, respectively. There is a standard deviation of 0.557 for CSPOGC, 0.154 for EPOGC and 0.118 for CGPOGC, and skewness of -1.136 for CSPOGC, -1.076 for EPOGC, and -1.044 for CGPOGC. For the control variables, the mean measure of FIRMSIZ is 18.092 and 0.671 for ATAN. For standard deviation, FIRMSIZ has a value of 1.171 and ATAN has a value of 1.071.

All variables show a positive value for kurtosis. PCM shows a kurtosis of 56.188 > 3, return on assets at 207.94 > 3, corporate social performance at 2.526 < 3, environmental performance at 52.478 > 3 and corporate governance performance at 6.284 > 3. These reveal that the tailedness of all variables except corporate social performance have

a heavier tail and this is called leptokurtic distribution. Corporate social performance has a lighter tail and this is called platykurtosis.

The results of the Pearson correlation showed that our variables are not highly correlated among themselves.

4.2. Unit Root Test

The summary techniques of the Levin, Lin and Chu t-test; Im, Pesaran and Shin W-stat, ADF–Fisher chi-square, and PP–Fisher chi-square panel unit root tests were engaged to check the stationarity of the variables for a consequential analysis. The results are shown in Table 5.

Table 5. Summary of panel unit root test.

Variable	Levin, Lin & Chu T	Im, Pesaran and Shin W-stat	ADF–Fisher Chi-square	PP–Fisher Chi-square	Status
PCM	-1707.77** (0.0000)	-216.084* (0.0000)	41.3103*** (0.0011)	88.2701*** (0.0000)	1(0)
ROA	-5.00863*** (0.0000)	-2.12282*** (0.0169)	68.1137*** (0.0066)	167.329*** (0.0000)	1(1)
EPS	-159.472*** (0.0000)	-30.1611*** (0.0000)	87.6731*** (0.0000)	69.4183*** (0.0049)	1(0)
CSPOGC	-6.03338*** (0.0000)	-2.92194*** (0.0017)	78.9087*** (0.0005)	170.736*** (0.0000)	1(0)
EPOGS	-7.14058*** (0.0000)	-3.94965*** (0.0000)	93.3148*** (0.0000)	263.385*** (0.0000)	1(1)
CGPOGS	-5.90793*** (0.0000)	-2.72280*** (0.0032)	74.3156*** (0.0015)	140.110*** (0.0000)	1(0)
LOGFIRMSIZE	-4.51124*** (0.0000)	-2.56319*** (0.0052)	73.8136*** (0.0017)	168.114*** (0.0000)	1(1)
ATAN	-6.71937*** (0.0000)	-2.48220*** (0.0065)	75.6818*** (0.0011)	126.240*** (0.0000)	1(1)

Notes: ***, **, and *, denote significance at 1%, 5%, and 10%, respectively; P-values are in parentheses.

The p-values are all smaller than 1%; therefore, the null hypothesis is rejected and we can conclude that the variables' series are stationary. The results illustrate that all the variables (explanatory, regressor and control variables) are stationary at both levels and at first difference.

4.3. Panel Regression Analysis

Model 1: Corporate social responsibility correlates with the price–cost margin of oil and gas companies in Nigeria.

Hausman test hypotheses:

H_0 : The random effects model is appropriate.

H_1 : The fixed effects model is appropriate.

If the p-value of the test result as presented in Table 6 is less than 5%, the null hypothesis is rejected; otherwise, the alternate hypothesis is accepted.

The Hausman test was adopted to ascertain the best-fitting model for the test. The cross-section chi-square statistic with five degrees of freedom is 7.04 and the p-value is 0.318, as presented in Table 6. The p-value of the Hausman chi-square statistic is greater than 5%; therefore, the null hypothesis is accepted for model one. In conclusion, the random effects model is a better option than the fixed effects model.

Table 6. Hausman test for model one.

Model One			
Test summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.037	6	0.318

Table 7. Corporate social responsibility and price-cost margin of oil and gas companies in Nigeria.

Variable	Coefficient	Std. Error	T-statistics	Prob.
C	13.079	15.638	0.836	0.404
CSPOGC	-0.573	1.164	-0.492	0.623
EPOGC	-0.818	2.569	-0.707	0.480
CGPOGC	-0.525	3.482	-0.151	0.880
FIRMSIZ	3.410	1.411	0.242	0.807
ATAN	-3.042	0.667	-4.558	0.000
R ²	36%			
Adjusted R-square	0.28			
F- stat	4.07%			
P-value	0.000000			
D.W stat	10.577			

As seen in Table 7, the R² of 36% represents the goodness of fit of the panel regression. The exogenous variables are jointly responsible for a 36% variation in the endogenous variable with an unexplained variation of 64%. This implies there are other variables that are responsible for the change in the endogenous variable which are not accounted for. The firm performance proxies by price-cost margin revealed a negative and non-significant relationship between corporate social performance, environmental performance, and corporate governance performance.

On the whole, the result of the panel regression is significant; the F-stat is 4.07 and is associated with a probability value of 0.00000. The Durbin–Watson statistic of 1.57 is approximately 2; this rules out all suspicion of the probability of first-order positive autocorrelation. The figures revealed indicate that this result is reliable for a meaningful analysis.

Model 2: Corporate social responsibility correlates with return on assets of oil and gas companies in Nigeria.

The Hausman test was adopted to determine the best-fitting model for the test. The cross-section chi-square statistic with five degrees of freedom is 1.596 and the p-value is 0.953, as presented in Table 8. The p-value of the Hausman chi-square statistic is greater than 5%; therefore, the null hypothesis is accepted for model two. In conclusion, the random effects model is a better option than the fixed effects model.

Table 8. Hausman test for model two.

Model Two			
Test summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.596	6	0.953

Table 9. Corporate social responsibility and return on asset of oil and gas companies in Nigeria.

Variable	Coefficient	Std. Error	T-statistic	Prob.
C	695.306	567.968	1.224	0.222
CSPOGC	32.958	27.535	1.1969	0.023
EPOGC	-91.345	90.323	-1.011	0.313
CGPOGC	-47.073	124.704	-0.377	0.706
FIRMSIZ	-14.203	11.586	-1.226	0.222
ATAN	-8.098	22.714	-0.357	0.722
R ²	18%			
Adjusted R-squared	-0.02			
F-stat	0.6%			
P-value	0.705699			
Durbin–Watson stat.	2.429			

From Table 9 above, the R² value of 18% represents the goodness of fit of the panel regression. The exogenous variables are jointly responsible for an 18% variation in the endogenous variable with an unexplained variation of 82%. This implies there are other variables that are responsible for the change in the endogenous variable which are

not accounted for. The firm performance proxies by return on assets revealed a positive and significant relationship with corporate social performance. Return on assets indicates a negative and non-significant relationship with environmental performance and corporate governance performance. The overall panel regression result of the panel regression is not significant; the F-stat is 0.6 and is associated with a probability value of 0.705699. The Durbin–Watson statistic of 2.429 rules any suspicion of the possibility of first-order positive autocorrelation.

Model 3: Corporate social responsibility correlates with earnings per share of oil and gas companies in Nigeria.

The Hausman test was adopted to determine the best-fitting model for the test. The cross-section chi-square statistic with five degrees of freedom is 13.043 and the p-value is 0.043, as presented in Table 10 below. The p-value of the Hausman chi-square statistic is less than 5%; therefore, the null hypothesis is rejected for model three. In conclusion, the fixed effects model is a better option than the random effects model.

Table 10. Hausman test for model three.

Model Three			
Test summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.043	6	0.043

Table 11. Corporate social responsibility and earnings per share of oil and gas companies in Nigeria.

Variable	Coefficient	Std. Error	T-statistic	Prob.
C	11.513	70.002	0.164	0.869
CSPOGC	8.132	11.504	0.707	0.481
EPOGC	19.363	7.787	2.487	0.314
CGPOGC	0.977	10.575	0.092	0.927
FIRMSIZ	-6.510	2.346	-2.775	0.006
ATAN	1.627	1.436	1.134	0.259
R ²	38%			
Adjusted R-squared	0.29			
F-stat	4.3%			
P-value	0.000000			
Durbin–Watson stat	1.62			

From Table 11 above, the R² of 38% represents the goodness of fit of the panel regression. The exogenous variables are jointly responsible for a 38% variation in the endogenous variable with an unexplained variation of 62%. This implies there are other variables that are responsible for the change in the endogenous variable which are not accounted for. The firm performance proxies by earnings per share revealed a positive and non-significant relationship between corporate social performance, environmental performance, and corporate governance performance. This implies that exogenous variables tend to affect the endogenous variable only if the companies improve their CSR policies. On the whole, the result of the panel regression is significant; the F-stat is 4.3 and is associated with a probability value of 0.000000. The Durbin–Watson statistic of 1.62 is approximately 2; this rules out all possibility of first-order positive autocorrelation. The figures revealed indicate that this result is reliable for a meaningful analysis.

5. DISCUSSION

The results in model one (see Table 7), revealed a negative and non-significant relationship between CSPOGC, EPOGC and CGPOGC on the performance level (PCM) of the firms under study of -0.573, (0.404); -0.818, (0.623); -0.525 (0.880), respectively. These findings, which support (Wu et al., 2010), show that CSR has a negative relationship with performance and also supports the shareholder theory which hypothesizes that CSR of citizens is solely the responsibility of the government and that the responsibility of firms is exclusively to make a profit. Furthermore, mixed results (negative non-significant and positive significant relationships) were recorded between CSPOGC, EPOGC, and CGPOGC on performance level (ROA) of the studied firms of 32.958, 0.222; -91.345,

(0.023); and -47.073, (0.706), respectively. This result, to an extent, supports the stakeholder theory which hypothesizes that firms should consider the interests of shareholders in all aspects of their operations. The result for CSP correlates with the true nature of the Nigerian economy where most of the firms exhibit social responsibility by making donations to community projects and erecting buildings for health and education purposes (Agbiogwu et al., 2016; Ohiokha et al., 2012).

A positive and non-significant correlation was reported between CSPOGC, EPOGC, CGPOGC, and earnings per share. This revealed that CSR tends to impact the performance of the studied firms, however, the firms need to implement policies that will make this happen. These findings support those of Wekesa (2017), who recorded a positive but insignificant relationship with performance. The control variables of a firm's size and asset tangibility in model one revealed a positive but insignificant effect of firm size on performance 3.410, (0.807). This implies that a unit increase in CSR performance decreases the firm size. Asset tangibility has a negative but significant relationship on performance -3.042, (0.0000). For model two, a negative and insignificant relationship was reported for firm size and asset tangibility; -14.203, (0.222) and -8.098, (0.722), respectively. It can be inferred that a unit increase in CSR will decrease performance. For model three, a negative but significant relationship was recorded for firm size; -6.510, (0.006). This implies that a unit increase in CSR performance will lead to a unit increase in firm size. A positive but insignificant relationship was recorded for asset tangibility; 1.627, (0.259), so it can be inferred that a unit increase in CSR will decrease performance.

6. CONCLUSION

The results and findings of this study revealed a discrepancy between the CSR performance of an emerging business climate such as Nigeria's and that of developed nations. Mixed results were found regarding the performance of the studied oil and gas companies in Nigeria. Although the individual effects of CSP, CGP, and EP are mixed on performance, the general findings revealed that implementing CSR practices will positively affect the financial performance of companies. Based on the outcome, it can be concluded that the studied companies practice corporate social responsibility to a great extent, however, there is still room for performance improvement. This can be achieved by increasing the CSR index scores, as failure to do this may lead to a crisis in the host communities.

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