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Role of Institutional Factors and Environmental Policy in Improving Corporate Sustainability Initiatives in Nigerian Listed Non-Financial Firms

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ABSTRACT

As a result of low attention given towards corporate sustainability initiatives (CSI) which encompass economic, environmental, social, and governance aspects by companies to their host communities, this study examines the relationship between institutional factors such as economic constraints, and competition, and environmental policy towards CSI, as well as firm specific attributes such as company size and leverage on the Nigerian non-financial listed firms. Data were collected from the firms assessed and documented by global consensus rate of corporate social responsibility (CSRHUB) from 2018 to 2023. A total of 300 firm-year observations were considered using the annual reports and accounts of 50 sampled companies. The panel-corrected standard errors (PCSEs) and fixed generalised lease square (GLS) regression models were used to test the hypotheses for this study. The result established that economic constraints measured by access to finance is not significantly related to CSI. In contrast, competition and environmental policy are positive and significantly associated with CSI. Likewise, company size and leverage indicate a positive relationship with CSI. Hence, this study suggests that regulatory authorities should assess how the companies deal with issues relating economic constraints to ensure a good access to finance that could be responsible for sustainability initiative practices among non-financial firms in Nigeria.

1. Introduction

Sustainability is one of the most vital and dominant issues in an environment that has stung from overpopulation, pollution, climate change, and resource diminution. It has turn out to be progressively pertinent area of research, taking the varied consideration of businesses and academia (Hahn & Kühnen, 2013; Ruiz-Lozano & Tirado-Valencia, 2016). Prior scholars for instance, Hamid and Othman (2019) argue that sustainability is all about the ability to preserve firms little funds for both current and future generations. They added that sustainability is a sister concept of corporate sustainability reporting (CSR). Global reporting initiative (GRI) is the most widely adopted framework for CSI among big firms in over 100 nations (KPMG, 2020; Halkos & Nomikos, 2021). GRI is an independent international organization responsible for the Global Sustainability Standards Board (GSSB), and its guiding principle, known as 'G4 Guidelines', aim to support organizations in enhancing their clarity and transparency in reporting the constructive and adverse effects on sustainable growth. Beside the GRI, there are other major sustainability frameworks that were used in the prior studies, such as the basic framework for connecting predictable knowledge and universal feeling from the perception of economy, society and environment (Yang et al., 2020). Thus, this study adapted the GRI guidelines framework because of its comprehensiveness as it encompasses economic, social, environmental, and governance indices in explaining the extent of CSI.

Corporate sustainability initiative entail mixing sustainable development ideas into the industry's daily acts (Kumo, 2023). These ideas include inspiring social justice, rising economic efficacy, and improving environmental concert. Initiatives to encourage business sustainability have been created, as confirmed by the Sustainability Reporting Guidelines, the Global Reporting Initiatives, ISO 14001, and the United Nations Global Compact (UNGC), which regulates environmental management (Abdul Latif et al., 2023; Kumo, 2023). Hitherto, attaining a sustainable balance amongst economic, social, and environmental performance at the business level is really inspiring (Aksoy et al., 2020; Kumo et al., 2023).

As institutional theory implies, initiating the CSI depends on several organizational dynamic forces such as normative, regulative, and cognitive forces linked to the limited context in which the society is rooted (Simoni et al., 2020). These drivers have been clustered mainly into three captions, i.e., coercive, normative, and mimetic pressures (Abdul Latif et al., 2020). Accordingly, Abdul Latif et al. (2020) posit that rising on businesses to retort to calls and act more sustainably, resulting in firms granting due consideration to social and environmental deliberations in their decision-making. Coercive pressures have been daunting in leading corporations to implement initiative initiatives (Kingsley et al., 2013; Kumo et al., 2023). In line with the above, the NSE regulations and CBN Laws relating to SI are coercive pressure instruments influencing firms' initiatives.

Similarly, normative pressures ascend through the impact of proficient networks that provide room for precise initiatives. Examples of such forces could emanate through accounting firms, regulatory bodies that develop codes of conduct for CSI, and proficient accounting links (Abdul Latif et al., 2020; Jalaludin et al., 2011; Kumo et al., 2023). Mimetic pressures can ascend, for instance mimetic pressures might originate from lifting best initiatives of those professional establishments alleged as successful (Abdul Latif et al., 2020; Sufian, 2012).

Institutional theory has even now proven its rationality across diverse fields, leading to a better comprehending of CSI changing aspects, and self-sufficient tactical analysis (Geerts et al., 2021; Tavares & Dias, 2018). However, companies may selectively portray themselves in a favourable light within their specific institutional settings. Hence, increasing evidence suggests that corporate sustainability is absurd, as businesses must simultaneously comprehend environmental, social, and economic goals (Luo et al., 2020).

In this context, further study inclines to address whether institutional factors such as financial constraints (i.e., access to finance), regulation, and enforcement (Sommer, 2017) are reliably anxious with sustainability matters and touch the readiness of corporations to resort to developing CSI. A company's long-term viability can be threatened by various factors, including financial constraints (i.e., access to finance), regulation, and enforcement, localization of standards, implementation and certification costs, and awareness of entrepreneurs based on political and business environment pressures (Sommer, 2017; Van et al., 2025).

Besides, not all aspects of regulation and enforcement classes are observed in every country case. While some institutional drivers and constraints are relevant in all study locations, others are specific to certain nations (Kumo, 2023). For example, Sommer (2017) covers the incidence of various factors in Brazil, China, India, Indonesia, and South Africa. He observed that standards implementation is basically low in South Africa as several businesses are unmindful of sustainability principles and their conceivable value to the business. He added that most businesses, characterized by low environmental awareness and fierce price competition, serve the local market (Sommer, 2017).

According to Damuri and Santoso (2017), 'several government programs in Indonesia provide technical assistance and training through various public institutions that primarily target businesses'. They also grant tax reductions and exemptions, for instance, for pollution control equipment and the cost of waste treatment. Also, Coelho and Nunes (2017) added that 'In Brazil, some lead firms similarly offer supplier development programs or subsidize the costs of standards implementation.' Likewise, Kathuria et al. (2017) affirmed that 'the Indian government has installed various subsidy and reimbursement schemes to offer financial assistance for the certification costs of selected national and international standards'.

Even though ecological receptiveness is mostly low amid businesses, binding regulations effectively force firms to implement measures, as organizations are susceptible to unadorned penalties of authorized reprisal (Coelho & Nunes, 2017; Kathuria et al., 2017). China has established general standards, such as the 'China Forest Certification Scheme (CFCS)', that are compulsory for nationwide manufacturers and accordingly initiate the level of standards exhibition (Cao, 2017; Damuri & Santoso, 2017). One can neither find direct evidence of institutional factors in any case tailored to promote sustainability standards implementation directly. Thus, it is unsurprising that such factors are still at an initial phase and are likely to feast further extensively (Kumo et al., 2024).

In the context of Nigeria, for example, the Central Bank of Nigeria issued an explicit directive to economic organizations to integrate sustainability problems into their corporate report and prepare a separate statement containing SI. Therefore, financial institutions must adhere to sustainable banking principles to promote social responsibility (CBN, 2012). Consistently, Christofi et al. (2012) suggested that stakeholders modify corporate sustainability decisions to recompense businesses for adhering to sustainability principles and penalize those who do not. Against this background, it is observed that "competition" and "access to finance" are factors that in line with present literature can either stand-in or hinder the spread of sustainability standards. Prior studies reveal that there were rare situations in which these factors stances as drivers for implementing measures, mostly they were found to be appropriate constraints (Sommer, 2017).

Consequently, this study uses the variable competition and access to finance as factors that institutionally geared the corporation's need to address financial issues to help improve and enhance their businesses because none of these variables was used to measure institutional factors in the Nigerian context. Furthermore, access to finance is an essential proxy for economic conditions due to essential investments in innovative environmental-friendly production expertise and workforce training for sustainable development (Kumo, 2023).

According to Bueren (2019) 'Environmental Policy (ENVP) is primarily concerned with how to govern the relationship between humans and the natural environment in a mutually beneficial manner. Traditionally, it has been defined in terms of the problems it addressed, such as controlling pollution, waste flows, and limiting habitat loss.' However, policymakers have started to appreciate that ENVP would be genuinely successful, only when it is compassionately integrated with other segments and policy extents (Benson & Jordan, 2015). In line with the above, Bueren (2019) argued that such candid administrative principles do not work in all situations. For instance, some environmental challenges, such as global warming, illuminate the need to view Earth as an ecosystem consisting of various subsystems, which, once disrupted, can lead to rapid changes beyond human control (Kumo, 2023). Getting polluters to pay or the sudden adoption of the precautionary principle by all countries would not necessarily roll back the damage already imparted to the biosphere, though it would reduce future damage (Bueren, 2019).

A significant concern of developing nations in today's environment is the need for environmental authorities to ensure that corporations adhere to environmental legislation, standards, and policies (Bradshaw et al., 2021). They added that more needs to be done in this area for developing countries to succeed in coercing businesses to comply with the policies. Thus, it is essential on a global scale as it's been observed that foreign investors are increasingly concerned about environmental issues because of the increasing importance given to economies that facilitate the move from the remains of fuels to renewable energy sources (Bradshaw et al., 2021). Considering the argument above, this study intends to use ENVP as a guiding principle to moderate and strengthen the relationship between institutional factors and CSI.

2. Literature Review

2.1 Economic Constraints (Access to finance) and Corporate Sustainability Initiatives

According to institutional theory, external environment constituents exert distinct constraints such as regulations, norms, and initiatives upon organizations' behaviours, including SI (DiMaggio & Powell, 2000; Scott, 2014). Thus, Economic constraints involve organizing the need to interact with the environment in ways that are acceptable to the various elements to the extent that institutional rules are fused within establishments as a means to gain legitimacy, resources, and stability, as well as to enhance sustainability forecasts (Meyer & Rowan, 1977). Therefore, the sources of coercive mechanisms include regulations and economic constraints' pressures that affect organizations' decisions concerning sustainability (Blanco-Portela et al., 2018).

Prior studies, for instance, Kumo (2024) believed that access to finance is interrelated with the ability of organizations to obtain financial services. It has also been recognized as essential in helping firms' SI and growth by financing existing and new investment projects (Beck et al., 2009; Kumo et al., 2023). Similarly, Giang et al. (2019) noted that firms would invest in schemes where the expected benefits surpass the costs. An efficient investment is realized only when the firms do not face credit impediments discrete from their concert.

From a theoretical lookout, stakeholders contended that companies could finance their processes and development in many ways. Moreover, other organizations have unbalanced access to finance. Kumo et al. (2024) believed that since the financiers in several evolving economies have not been keen, as such companies in these nations might face substantial challenges in gaining finances and other funding services at reasonable rates and fair standings. Prior empirical viewpoint shows that, prevailing studies largely affirm that firms in emerging nations often cite economic constraints as the focal impediment to their growth (Ayyagari et al., 2008; Sleuwaegen & Goedhuys, 2002; Wang, 2016). However, some evidence from other studies like Mohnen et al. (2008), Ferrando and Ruggieri (2018), and Yazdanfar and Öhman (2015) suggest that economic constraints as a yardstick for the advancement of the financial sector might not certainly lead to an optimistic result in terms of development for organizations.

Notwithstanding, Giang et al. (2019) found that access to finance as proxy for economic constraints significantly improved firm's efficiency, which invariably improves CSI. In addition, they recommended that the government ought to expand laws and policies fit for firms' CSI to enable them access to finance without difficulty. It is believed that the high efforts of policymakers are essential in creating a hale and hearty economic atmosphere to inspire firms' access to finances (Kumo, 2023). Similarly, Amran and Haniffa (2011) found that government's role in CSI is significantly positive to firms' finance access. They also found that companies' dependent on government contracts as sources of access to finance contribute considerably to CSI.

Hence, it is indispensable to study the effect of financial accessibility on organization growth and examine whether the firm has access to finance as an economic constraint proxy, which can improve its SI. Accordingly, a hypothesis is outlined as follows.

H1: There is a positive relationship between access to finance and CSI.

2.2 Competition and Corporate Sustainability Initiatives

Competition may cause industry associates to adopt the approaches and initiatives of those seeming to be more successful and consequential to the cause and effect amongst these organizations. As local businesses get more globalized, they could imitate or follow other prosperous foreign businesses in an attempt to fit in with the global community (Kumo et al., 2023). In order to develop a theoretical prediction regarding the relationship between competition based on the presence of foreign owners and the CSR initiatives of domestic companies, studies draw from several components of the literature. The effect of trade liberalization on economic growth has long been studied in the literature (Flammer, 2015; Frankel & Romer, 1999). Although it may be difficult to compete on a cost basis, Kumo et al. (2023) noted that businesses with foreign shareholders have an edge over their rivals in their interactions with local stakeholders as a result of trade liberalization.

In light of this, this study argues that domestic businesses could become more competitive by strengthening their ties with local customers and other international stakeholders. By stepping up their ethical and environmental initiatives, businesses can set themselves apart and create an easy trade barrier that prevents them from outperforming their rivals. For instance, the stakeholder theory of Freeman and Evan (1990) and Hörisch et al. (2020) contend that businesses ought to represent the interests of a wider range of stakeholders. Stakeholder theory has been used to project that CSR initiatives can play a key role in securing the resources and support that stakeholder require (Ricart et al., 2005; Suteja et al., 2017). In line with this, a number of extensions of stakeholder theory, including Mitchell and Lee (2019), Ranängen (2017), and Barney (1991), suggested that businesses might participate in CSR programs to boost their productivity as well as their reputation, status, and trust. According to Mitchell and Lee (2019), a company's ability to intensify long-term shareholder value and maintain its competitiveness in the global market depends on its ability to create shared value, which is distinct from philanthropic value. Ho (2017) and Porter and Kramer (2006) highlighted the strategic significance of considering a wider corporate environment and generating "shared value" for the institution and society.

Furthermore, CSR initiatives are a component of a company's competitive strategy and may be more important to the corporate approach than is often believed (Flammer, 2015). Businesses that compete for resources or depend on foreign investors typically explain their CSR initiatives in a way that meets their expectations in order to keep existing investors and draw in new ones (Amran & Haniffa, 2011). According to Amran and Haniffa (2011), the aforementioned considerations generally suggest that domestic enterprises may be able to outperform rivals based on the percentage of foreign shareholders. In response to fierce competition, businesses may increase their SI investment. Therefore, this study suggests that SI and competition based on foreign shareholders are fundamentally related.

H2: There is a positive relationship between competition (foreign shareholders) and CSI.

2.3 Environmental Policy and Corporate Sustainability Initiatives

According to institutional theory, creating legality within corporate institutions is a common method for firms to gain societal recognition. Corporate organizations and the values of the business environment are influenced by rules and norms (Emtairah & Mont, 2008), demonstrating that institutional theory focuses on how companies respond to the rules, conventions, and expectations of institutional field members. Powell and Colyvas (2008) suggested that institutional theory shapes organizations and their commercial practices. For instance, in prior studies, Hossain et al. (2019) reported that seven major Canadian ports proactively integrated SI into their operations, including ENVP development. In addition, they affirm that all integrated SI in the Canadian ports were made to improve environmental policy routine.

In Nigeria, Haladu and Bin-Nashwan (2021) found empirically that corporate attributes and SI are significantly correlated with environmental policy agencies. It supported the conclusions of Al-Farooque and Ahulu (2015), who showed that environmental and internal corporate policies have an impact on SI. On the basis of the aforementioned arguments, this study assumes that ENVP and SI are related. Consequently, the following hypothesis are put forth:

H3: There is a positive relationship between environmental policy and CSI.

2.4 Company Size and Corporate Sustainability Initiatives

Many large businesses are changing their stance on sustainability as they become more proactive than reactive on social and environmental issues (Camilleri, 2017). Usually, a firm's size is used as a visibility proxy (Branco & Rodrigues, 2006), as larger firms are more visible. Therefore, they are pressured to legitimize their business activities to initiate a better sustainability practice. Additionally, larger companies can afford to pay for CSR initiatives because they have more financial resources (Rodriguez-Fernandez, 2016; Ho & Taylor, 2007). The positive relationship between the firm's size and SI has been recorded by numerous empirical studies, including Sroufe and Gopalakrishna-Remani (2019). The works of researchers reviewed in this study found that the size of a company has a significant impact on SI vis-à-vis social and environmental issues (Pham et al., 2021; Ja'afar et al., 2021; Elijido-Ten & Tjan, 2014). Thus, a positive relationship is expected. However, Thomas and Indriaty (2020) found that company size was insignificant with SI. Therefore, it concluded that the company size could not improve the SI as found by prior research that business is associated with the extent and quality of SI (Ching et al., 2017; Issa et al., 2022).

In light of the aforementioned, DiMaggio and Powell (2000) attest those larger businesses are more vulnerable to sustainability practices than smaller ones. Numerous academics, like Schnackenberg and Tomlinson (2016) and Aguilar-Fernández and Otegi-Olaso (2018), have supported the claim that larger firms are held to a higher standard of accountability and openness since they have more stakeholders. In contrast, Abdulsalam and Babangida (2020) investigate how company size and sales have a major influence on the SI of Nigerian oil and gas companies. Their findings indicate that the profitability and SI of Nigerian oil and gas companies are significantly positively impacted by company size. In a similar vein, Eneh (2019) investigates the impact of business size on SI in Nigeria. The study employs the ex-post causal research design. The sample consists of 35 manufacturing companies on the NSE enumerated. The study also found that firm size positively and significantly impacts SI.

H4: There is a positive relationship between company size and CSI

2.5 Company Leverage and CSI

Stakeholder theory has also been used to elucidate on the connections between SI operations and leverage. In an effort to reduce their costs and, in turn, their capital expenditures, highly leveraged companies spread more voluntary information and rules of conduct (Chang et al., 2019). Few research has demonstrated the connection between leverage and SI, including Yang and Lai (2021) and Nazari et al.

(2015). Leverage increases financial risk, which is why businesses with higher levels of leverage disclose more sustainability data (Hussan, 2016). High-leverage corporations find it difficult to raise money without providing comprehensive information, therefore they must fully disclose their leverage position in order to obtain additional funding, whether from banks or the stock market, as they are viewed as dangerous (Dell'Ariccia et al., 2013).

According to Martínez-Ferrero and García-Sánchez (2017), various research have found that hostile relations are supported due of the fact that corporations' sharing of sustainability information reduces as their leverage increases. Companies that have a lot of leverage are therefore more eager to disclose financial information to lenders and holders of debentures. It is a common belief that more disclosures must be made to satisfy long-term creditors and remove suspicion. Financial leverage and SI were found to be directly correlated by Yang and Lai (2021). However, Uwuigbe et al. (2018) found a substantial inverse association between the level of corporate environmental disclosure and firms' leverage, as measured by the debt-to-equity ratio. Creditors, yet, need a yardstick to monitor the debtor's financial status to measure the risk involved. Financial leverage is a ratio of total debt to total assets (Orazalin & Baydauletov, 2020).
H5: There is a positive relationship between company leverage and CSI

2.6 Theoretical Framework

This research employed Institutional and stakeholder theories to investigate the effect of institutional factors towards CSI. Institutional theory provides the validity across different domains, leading to a better understanding of CSI dynamics independent of strategic analysis (Geerts et al., 2021). On the other hand, 'Stakeholder theory accentuates that a firm is liable to not only the providers of funds but several stakeholders as well as the society and location where it exists'(Kumo, 2023). As such, CSI can be used by companies for environmental protection and social benefit. Thus, investigating the factors that create impact on CSI in non-financial firms registered by CSRHUB in Nigeria helps this study to fill out the prevailing theoretical framework. Results from this research might be pertinent to these establishments and regulatory authorities, like the Nigerian exchange group, and the central bank of Nigeria as supervisory bodies, as they enumerate the requirement for satisfying disclosure guiding principle to strengthen community understanding of the value of CSI practices in Nigeria.

3. Data and Methodology

The study's population consists of all non-financial companies registered on the Nigerian Exchange Group (NGX). As of December 2023, the CSRHUB consensus raters had assessed and ranked 84 financial and non-financial organizations on the NSE. Nonetheless, the sample for this study consists of the 50 non-financial sector companies in Nigeria that were assessed and rated by the CSRHUB, among others, due to their significant global contribution to the field of CSR. The study's duration is six (6) years, from 2018 to 2023. In order to investigate the impact of CSI on non-financial sectors, an evaluation of firms' roles in supporting environmentally friendly practices has been carried out. Purposive sampling was used to select the study's samples, which requires concentrating on entities with particular structures that may provide statistics on a study issue (Etikan et al., 2016). Data for this research has been obtained from a secondary source to determine the proportion of contributions and disparity in SI among the sampled companies. Secondary data have been collected to ease the process of retrieving the information from (corporate annual reports, company websites, and stand-alone reports) for the fifty (50) identified sampled based on CSRHUB recognition, quoted companies from 2018 to 2023 and third-party data from the website.

3.1 Variables Measurement

The reports from publicly traded Nigerian companies on their CSR efforts are valuable sources of information. Reading every area of an annual report is essential to ensure that all SI are precise and

comprehensive. A keyword search has been used to verify the legitimacy and completeness of these SI items by utilizing terms such as employee benefits, environmental protection, health and safety, ESG considerations, etc. The final checklist elements used to evaluate the extent of SI by companies are SI checklist items. Afterwards, the SI index was calculated. Previous studies have used a variety of methods to calculate the SI index. The disclosure index was utilized in this study (Haniffa & Cooke, 2002; 2005; Jamil et al., 2021; Saleh et al., 2010; Waheed et al., 2021).

Furthermore, to quantify SI as a binary variable, companies are listed as "1" if they reported SI items in their annual report, and "0" if otherwise (Gujarati & Porter, 2009). Every SI sub-score, including the 14 economic, 12 social, 15 environmental, and 15 governance dimensions, was combined to determine the overall score values for SI disclosure. Further, the aggregate scores were computed and the disclosure model scoring is additive.

Five autonomous variables are used, composed of Economic constraints access to finance (ACFI), competition (COMP), environmental policy (ENVP) and firm-specific operating features consisting of company size (CSZE), and leverage (LEV). Economic constraints proxies by access to finance is measured bank loan/ overdraft (Giang et al., 2019). Similarly, competition is measured as dummy variable '1' is present, and '0' if otherwise whether domestic companies have foreign shareholders (Amran & Haniffa, 2011; Flammer, 2015). Likewise, the environmental disclosure index was used in measuring environmental policies. It ranges between '0' and '1', representing the disclosure indices adapted from other environmentally related information (Wiseman,1982). In addition, natural logarithms of the firm's total assets are used in calculating company size (Crisóstomo et al., 2020; Hussain et al., 2018). To quantify the leverage, a total debt is divided by total assets of the firms to get the leverage (Crisóstomo et al., 2020; Li et al., 2018)

3.2 Model Description

This study aims to assess environmental policy, institutional factors, and firm-specific characteristics, across a six-year period as predictors of SI for publicly traded non-financial enterprises. Consequently, an equation-based panel regression model was used in the investigation as:

$SI_{it} = \beta 0_{it} + \beta 1ACFI_{it} + \beta 2COMP_{it} + \beta 3ENVP_{it} + \beta 4CSZE_{it} + \beta 5LEV_{it} + \mu_i$ i

Where:

β0- symbolizes the beta coefficient value of the panel model regression

β1- β5 indicate beta coefficients of the descriptive variables for the study

μ represent the regression model's error term

ACFI = dummy variable for bank loan/ overdraft, COMP = dummy variable whether domestic companies have foreign shareholders, ENVP = Dummy Environmental Disclosure Index used in measuring environmental policies. CSZE = company size, and LEV = leverage. *i* signifies the number of firms, and *t* implies the number of years.

Table 1 below presents the operational measurements and sources of variables used in the equation.

Table 1: Operational measurement of variables

Dependent/Independent Variables	**Code**	**Measurement and sources**
Corporate Sustainability Initiatives	CSI	Total score values for Sustainability disclosure are aggregated from all sub-scores of SI.

Dependent/Independent Variables	Code	Measurement and sources
Economic Constraints (Access to Finance)	ACFI	Dummy variable for bank loan/ overdraft (Giang et al., 2019).
Competition	COMP	Whether domestic companies have foreign shareholders, dummy variable '1' is present, and '0' otherwise. (Flammer, 2015; Amran & Haniffa, 2011).
Environmental Policy	ENVP	The Environmental Disclosure Index was used in measuring environmental policies. It ranges between '0' and '1', representing the disclosure indices adapted from other environmentally related information (Wiseman,1982).
Company Size	CSZE	A score of total assets. (Amran et al., 2011, 2014; Issa et al., 2022)
Leverage	LEV	Total debt / Total Asset (Nazari et al., 2015)

Source: Author's Compilation

4. Finding

4.1 Descriptive Statistics

Table 2 shows a mean value of 0.3451, a minimum of 0.0000 and a maximum of 0.5179 for the SI of the sector. The positive mean coefficient specifies that listed non-financial firms in Nigeria engage in SI by 34.51%, and some firms within the industry do not actively participate in SI, notwithstanding a maximum of 51.79% of firms have been contributing to SI.

Table 2: Summary of descriptive statistics

Variables	Obs	Mean	Std. dev.	Min	Max
SI	300	0.3451	0.0666	0.0000	0.5179
ACFI	300	0.9700	0.1709	0.0000	1.0000
COMP	300	0.5767	0.4949	0.0000	1.0000
ENVP	300	0.2883	0.1420	0.0000	0.6667
CSZE	300	17.4938	2.2783	14.2256	21.5954
LEV	300	0.5873	0.2537	0.1083	2.0682

The table similarly shows that the mean of ACFI is 0.9700, indicating that 97% of the listed non-financial firms experienced economic constraints, leading them to collect either loan or overdraft facilities to run their operations. COMP also shows a mean value of 0.5767, which indicates that 57.67% of non-financial companies have foreign shareholders, a minimum of 0 indicating the absence of foreign share and a maximum of 1 depicting the presence of foreign shareholders. This value is also higher than the 31.6% Flammer (2015) reported. On the other hand, ENVP shows a mean of 0.2883, a minimum of 0, and a

maximum of 0.6667, which signifies that 28.83% represents the disclosure indices on the environmental policy of the non-financial companies. This figure is equally lower than the 0.5506 simple average disclosures indices Haladu and Salim (2016) reported.

4.2 Correlation Analysis

Table 3 presents the correlation analysis of the study variables. The result from Table 3 displays the explanatory and predictive variables' correlation matrix. All of the study's variables were found for access to finance, competition, and environmental policy to be associated with sustainability initiative. This indicates that the SI is negatively affected by an increase in access to finance, whereas, competition is positively affected as a result of foreign shareholders. Correspondingly, environmental policy was also associated with SI positively. Similarly, because larger enterprises are more likely to implement SI policies and programs, company size has a positive correlation with SI. Because of their disparities in size, Nigerian non-financial enterprises evaluated by CSRHUB exhibited unstable SI levels.

Table 3: Correlation Matrix

Variables	**SI**	**ACFI**	**COMP**	**ENVP**	**CSZE**	**LEV**	**VIF**
SI	1.000						
ACFI	-0.0549	1.000					1.01
COMP	0.0133**	0.0075	1.000				1.04
ENVP	0.6013***	-0.0099	-0.1133**	1.000			1.17
CSZE	0.3544***	-0.0963*	0.1078**	0.3509***	1.000		1.23
LEV	0.0582**	0.0036	-0.0194	0.1237**	0.2303***	1.000	1.06

Note: ***, ** and *indicate, 1%, 5% and 10% significance levels, respectively

Equally, LEV and SI have a positive correlation, meaning that the more a company depends on debt to finance its operations, the less money it may have to spend on SI techniques. The association matrix also shows that there is no multicollinearity between the predictors because the strongest correlations between the variables are all less than or equal to 0.72. Thus, multicollinearity exists when the independent variables are discovered to be highly related. According to the rule of thumb, a correlation coefficient of less than 0.9 cannot cause serious multicollinearity issues (Pallant, 2013). Similarly, none of the regression analysis's variance inflation factors (VIF) are greater than 2.0, indicating that the model does not have significant multicollinearity (Sekaran & Bougie, 2016).

4.3 Regression Diagnostic Test

Table 4: Regression Diagnostic Test

Diagnostic Test		
Heteroscedasticity	Chi2(1)	Prob>Chi2
	1.18	0.0072
Autocorrelation	F(1, 49)	Prob>F
	23.742	0.0000
Pesaran CD Test	Pesaran's CD	ABS
	0.940, Pr = 0.3472	0.459

To select the optimal regression model for this study, several diagnostic tests were conducted in line with prior research (Musa & Ibrahim, 2024) to ensure the validity of the regression estimates and avoid biased statistical inferences. The results of these diagnostic tests are presented in Table 4.

The models were first subjected to the Breusch-Pagan/Cook-Weisberg Lagrange Multiplier Test, which verified the presence of heteroscedasticity (p-value = 0.000). Second, autocorrelation was tested using the Wooldridge test, and the results indicate that autocorrelation exists in the model (p-value = 0.000). Finally, a Pesaran test was performed, and the outcome (ABS = 0.459) validated the issue of cross-sectional dependence on the model. To solve the autocorrelation issue, this work used panel-corrected standard error (PCSE) regression, as recommended by Beck et al. (1995) and Moundigbaye et al. (2018). The study by Moundigbaye et al. (2018), and Musa et al. (2021; 2025) also claims that PCSE is superior to traditional hypothesis testing procedures since it accounts for autocorrelation, cross-sectional dependence, and heteroskedasticity all at once and offers a standardized coefficient.

The main regression result regarding the influence of institutional factors proxied by economic constraints (access to finance) and competition, Environmental policy and SI is re-estimated using fixed generalised lease square regression model (GLS) in addition to the panel corrected standard error. This study used GLS because the model is well-calibrated where there is a presence of cross-sectional dependence (Hoechle, 2007). Believing that ignoring cross-sectional correlation in the estimation of the panel model might lead to severe biased results. Therefore, GLS is an alternative model to validate the PCSE results. For ease of judgement, the outcome of the PCSE and the GLS alternative estimations are presented in Table 4. Remarkably, the alternative model reveals outcomes that are almost interrelated to the main analysis results using PCSE regression.

Table 5: Regression Results for the PCSC and GLS Model

	PCSE Model			**GLS Model**		
VAR	**Coeff.**	**z**	**p>z**	**Coeff.**	**z**	**p>z**
ACFI	-0.0136	-0.60	0.551	-0.0136	-0.76	0.449
COMP	0.0080	1.89	0.049**	0.0080	1.27	0.003***
ENVP	0.2662	17.57	0.000***	0.2662	11.42	0.000***
CSZE	0.0048	3.14	0.002***	0.0048	3.20	0.001***
LEV	-0.0124	-2.20	0.028**	-0.0124	-1.00	0.318
_cons	0.2009	5.41	0.000***	0.2009	6.49	0.000***
Obs.	300			300		
R-square	0.3916			-		
Wald Chi^2	568.75			193.14		
Prob>Chi^2	0.000			0.000		
Year effect	Yes			Yes		

Notes**:** *; **; and *** represent 10%; 5%; and 1% Significance level, respectively

The regression results on the relationship between institutional factors (economic constraints proxied by access to finance), competition and SI. It also presents the relationship between environmental policy, other firm specific attributes such as company size and leverage and SI. Table 5 displays the outcomes of the Generalize Lease Square Model (GLS) and panel corrected standard error (PCSE) regressions. According to the chi-square results of the Hausman specification test, the two models' explanatory variables cooperate to define SI for Nigeria's non-financial firms (p>0.000).

Firms' SI is not affected by their access to finance, as access to finance (ACFI) is not substantially connected to SI, according to the PCSE regression result (z > -0.60 and P > 0.551). Similarly, robustness regression results using the GLS model reveal a similar outcome (z>-0.76 and P>z 0.449). The results imply that the predicted value of SI does not decrease or increase due to the economic constraints of the firms under consideration. The findings did not support the theory which predicts that the sources of coercive mechanisms include regulations and economic constraints' pressures that affect organizations' decisions concerning sustainability (Blanco-Portela et al., 2018).

Conversely, this result is in line with the suggestion by Mohnen et al. (2008) and Yazdanfar and Öhman (2015) that economic constraints as a yardstick for the development of the financial sector may not necessarily lead to a positive result in terms of growth for firms. Notwithstanding, the result negates the findings made by Giang et al. (2019) that access to finance significantly impacted firm productivity, which invariably improves SI. Thus, access to finance measured by loan/overdraft does not improve SI.

This finding suggests that leverage has a detrimental effect on the assumed value of SI. This result demonstrates how using debt to finance the significant proceedings impedes the firm's ability to assume sustainable progress. The outcome is also in line with the findings of Bashiru et al. (2022). However, the result runs counter to Yang and Lai's (2021) empirical findings, which showed a direct correlation between SI and economic leverage. Consistent with the research prediction which relied on institutional theory and predicted that competition has a positive relationship with SI, the results shown in Table 5 indicate that competition has a significant and positive influence on SI in both the PCSE and GLS models with (Z >1.89 and P>Z 0.049) and (Z 1.27 and P>Z 0.003) respectively.

The result supports the theoretical prediction of the relationship between competition based on foreign shareholders' presence and domestic companies' CSR initiatives. It is also in line with Flammer (2015), who contends that in order to fit in with the global fraternity, local businesses may copy or emulate other prosperous foreign businesses as they grow more globalized. It is consistent with Amran and Haniffa (2011), who established domestic companies could gain a competitive advantage over others based on the percentage of foreign shareholders.

According to the research prediction, which is predicated on the idea that environmental policy has a positive and significant link with SI, institutional theory shapes firms and their behaviors in the business environment (Powell & Colyvas, 2008). The result is consistent with the research predictions, as shown in Table 5, which indicates that environmental policy (ENVP) has a positive and significant influence on SI in both PCSE and GLS models (Z> 17.57 and P>Z 0.000) and (Z> 11.42 and P>Z 0.000) respectively. The result also settles with the conclusions of Al-Farooque and Ahulu (2015), who recognized that business internal and environmental policies influence SI, as well as Haladu and Bin-Nashwan (2021)'s results that ENVP has a significant relationship with SI in Nigeria.

The results from Table 5 of this study also disclose that company size (CSZE) is significant and positively related to SI in both PCSE and GLS models (Z> 3.14 and P>Z 0.002) and (Z> 3.20 and P>Z 0.001) respectively. This outcome indicates that larger firms, in terms of total assets are more likely to engage in SI (Ren & Isa, 2023). The findings support earlier research showing that a firm's size significantly improves SI (Ja'afar et al., 2021; Pham et al., 2021; Sroufe & Gopalakrishna-Remani, 2019).

5. Discussion

This study tries to analytically use institutional factors such as economic constraints proxied by access to finance, competition and firm-specific attributes such as firm size, and leverage as determining factors for SI to explore their effect on non-financial companies rated and ranked by CSRHUB in Nigeria between 2018 and 2023. The sample size is 300 observations. The study works toward an inference about the impact

of institutional factors and firm-specific attributes on SI. Panel data was gathered from the annual reports and accounts of registered non-financial businesses in order to test five (5) hypotheses on the effects of access to finance, competition, and environmental policy as well as firm-specific variables like company size and leverage on sustainability initiative. The hypothesis was supported by the institutional and stakeholder theories, which forecasted the beneficial effects of the independent factors on sustainability initiative.

Since the company's access to finance and leverage have no convincing effect on sustainability initiative, the results of the PCSE and GLS models demonstrate that the IT and STs are unsupported. Conversely, sustainability initiative is positively correlated with competition and environmental policy. The study's findings give institutional theory credence. Because corporate internal and environmental policies have an impact on SI, the level of SI rises in tandem with the number of foreign shareholders. The rise in number of foreign shareholders increased assignation with stakeholders primes to view SI as a business policy with the feasibility to improve public services with the neighbouring community, yield tangible advantages that can upsurge the firm's profile and corporate environmental policies towards SI.

Similarly, encouraging and significant impact of company size on corporate sustainability initiative is also revealed. As a result, major firms provide a lot of transformation and a better chance to admire financial ceiling in expanding sustainability practices due to the volume of proficiency they have amassed. Based on our findings, we conclude that competition, environmental policy, as well as firm-specific variable company size significantly impact the CSRHUB standings and evaluations on the non-financial establishments in Nigeria.

Moreover, the results of this study should convince industries that one of the most effective ways to increase SI and speed up the process of sustainable development efforts is to increase the number of foreign shareholders on their boards. To sum up, this work has significant ramifications for environmental policy and legislation. The study's findings can therefore be used by regulators and policymakers to suggest a structure that will encourage the application of SI while maintaining its morality for both the environment and humanity.

6. Limitations and Suggestions for Future Study

It is important to keep in mind that this research has limitations. First, the study just examines Nigerian companies that CSRHUB has evaluated and ranked. Therefore, it would be inappropriate to extrapolate the study's findings to every business that trades on the Nigerian Exchange Group. The data covered only from 2018–2023, because the majority of Nigerian businesses are not included in independent sustainability databases like Thomson Reuters and the Dow Jones Sustainability Indices. Despite the fact that many businesses can now share sustainability reports with the public thanks to the internet, the data used in this study was meticulously taken from the company's yearly financial reports and other periodicals.

Nevertheless, as suggested by earlier research, this study only looked at the effects of a few institutional elements on SI and other particular characteristics that might have an impact on SI. Therefore, the use of sustainability committees and economic limitations on financial sector enterprises as possible predictors of SI to gauge their effects on SI could be replicated in future studies. Despite its flaws, the study adds to the body of knowledge by showing that environmental policies also increase SI, just as increasing the number of foreign shareholders does.

Data Availability

Data available on request from the authors

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Not applicable.

Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contributions

Auwalu Musa**:** Conceptualization, Methodology, Writing – Original Draft Preparation.
Usman Ahmed Kumo**:** Data Curation, Formal Analysis, Writing – Review & Editing.
Fathilatul Zakimi Abdul Hamid**:** Investigation, Validation, Visualization.
Mohd Hadafi Sahdan**:** Supervision, Project Administration, Funding Acquisition.

Disclosure of AI Use

AI tools were not used in the preparation of this manuscript.

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