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The Effect of Environmental Policies and Community Expectations on Corporate Sustainability Performance in Nigerian Companies: The Mediating Role of Eco-Innovation

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Abstract

This study examined the relationships between environmental policies, community expectations, eco-innovation, and corporate sustainability performance in Nigerian companies. Using a quantitative, cross-sectional survey design, data were collected from 282 medium and large-scale companies in the manufacturing, oil and gas, and service sectors. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to analyze the data. The results revealed positive influences of environmental policies and community expectations on both eco-innovation and corporate sustainability performance. Eco-innovation was found to mediate these relationships, playing a crucial role in translating external pressures into improved sustainability outcomes. These findings have important implications for managers, policymakers, and communities in promoting corporate sustainability. The study contributes to the literature by integrating Institutional Theory and Stakeholder Theory to provide a comprehensive framework for understanding corporate sustainability in developing countries. It offers valuable insights for fostering eco-innovation and enhancing sustainability performance in the Nigerian business context, with potential applications to other developing economies.

Keywords: Community Expectations, Corporate Sustainability Performance, Eco-Innovation, Environmental Policies, Nigeria, PLS-SEM

Introduction

Environmental sustainability has become a major concern worldwide due to the increasing effects of environmental degradation and climate change. In developing countries such as Nigeria, these challenges are particularly significant because of rapid industrialization, urbanization, and the intensive exploitation of natural resources. The growing environmental problems associated with industrial activities have heightened the need for effective

environmental policies and sustainable corporate practices. Consequently, attention has increasingly focused on understanding how environmental regulations, community expectations, and corporate sustainability initiatives interact to promote environmental responsibility and long-term economic development.

Historically, Over the past few decades, Nigeria has experienced substantial economic growth driven largely by industrial expansion and activities within the oil and gas sector. While this growth has contributed significantly to national development, it has also resulted in serious environmental consequences. Greenhouse gas emissions have increased considerably, while persistent oil spills in the Niger Delta have caused extensive ecological damage and disrupted local livelihoods. In addition, rapid deforestation has led to a significant decline in forest cover, making Nigeria one of the countries with the highest rates of forest loss globally. These environmental challenges have generated increasing concern among citizens, communities, environmental advocates, and international organizations, prompting demands for greater environmental accountability from both government and businesses.

In response to these concerns, the Nigerian government has introduced several environmental policies and regulatory frameworks aimed at reducing environmental degradation and promoting sustainable development. Notable among these initiatives are the revised National Policy on the Environment and the Climate Change Act of 2021, both of which seek to establish mechanisms for reducing carbon emissions and integrating climate action into national development strategies. Despite these efforts, weak implementation and inadequate enforcement have limited the effectiveness of many environmental regulations.

Existing literature has extensively examined various dimensions of environmental sustainability in Nigeria. Several studies have investigated the influence of environmental regulations on corporate performance, while others have explored the relationship between corporate social responsibility and community perceptions. Research has also examined the adoption of eco-innovative practices by manufacturing firms and the effectiveness of climate change policies in reducing industrial emissions. Furthermore, studies have analyzed the role of stakeholder pressure in encouraging environmental disclosure and improving corporate accountability.

The concept of eco-innovation has attracted increasing scholarly attention due to its potential to enhance environmental performance while supporting economic growth. Researchers have explored the drivers and barriers to eco-innovation adoption across different sectors of the Nigerian economy, including manufacturing, renewable energy, and small and medium-sized enterprises. These studies generally acknowledge the importance of eco-innovation in promoting sustainable development and improving organizational competitiveness.

Gaps.Despite the growing body of literature on environmental sustainability in Nigeria, important gaps remain. Most previous studies have examined environmental policies, community expectations, corporate sustainability performance, and eco-innovation as separate phenomena rather than as interconnected factors. For example, research on environmental regulations has often neglected the influence of community expectations, while studies focusing on community perceptions have rarely considered the broader policy environment. Similarly, investigations into eco-innovation have generally failed to assess its potential role as a mechanism through which environmental policies and stakeholder pressures influence sustainability outcomes.

Moreover, there is limited empirical evidence that integrates environmental policies, community expectations, and corporate sustainability performance within a single analytical framework. The mediating role of eco-innovation in these relationships remains particularly underexplored in the Nigerian context. This gap creates the need for a comprehensive study capable of explaining how external environmental pressures translate into improved sustainability performance through innovative corporate practices.

The significance of this study lies in its comprehensive examination of the factors that influence corporate sustainability performance in Nigeria. By simultaneously considering environmental policies, community expectations, and eco-innovation, the study provides a more holistic understanding of the drivers of sustainable business practices. The research contributes to theoretical development by extending existing sustainability models and demonstrating the importance of eco-innovation as a mediating mechanism between external pressures and organizational sustainability outcomes.

From an academic perspective, the study enriches the existing literature on environmental sustainability, particularly within developing economies where empirical evidence remains relatively limited. The findings offer valuable insights into the complex interactions among regulatory frameworks, stakeholder expectations, and corporate responses, thereby contributing to a deeper understanding of sustainability dynamics in emerging markets.

The knowledge generated from this study has important practical implications for policymakers, corporate managers, environmental regulators, and community stakeholders. For policymakers, the findings can provide guidance on designing and implementing environmental regulations that effectively encourage sustainable business practices. For corporate organizations, the study highlights the strategic value of eco-innovation as a means of enhancing sustainability performance while responding to regulatory and societal expectations.

Additionally, environmental agencies can utilize the findings to strengthen enforcement mechanisms and improve policy effectiveness. Communities and civil society organizations may also benefit from a better understanding of how their expectations and advocacy efforts can influence corporate environmental behavior. Ultimately, the study contributes to the broader goal of promoting sustainable development by identifying pathways through which environmental policies and stakeholder pressures can drive meaningful improvements in corporate sustainability performance.

Literature Review

Corporate Sustainability Performance in Nigeria

Corporate sustainability performance in Nigeria has shown mixed progress in recent years. A study by PwC (2022) revealed that 65% of large Nigerian companies now publish sustainability reports, up from 45% in 2018. However, only 30% have set concrete emissions reduction targets. The Nigerian Stock Exchange (2023) reported that companies listed on its Sustainability Index outperformed the general market by 12% in 2022, indicating a growing recognition of the value of sustainable practices. In the oil and gas sector, which accounts for 65% of government revenue, sustainability efforts have been particularly scrutinized. Shell Nigeria (2023) reported a 50% reduction in oil spills due to operational issues between 2015 and 2022, though spills from sabotage and theft remained high. In the manufacturing sector, a survey by Deloitte (2021) found that 40% of Nigerian manufacturers had implemented energy

efficiency measures, resulting in an average 15% reduction in energy costs. Despite these improvements, challenges remain. The Carbon Disclosure Project (2022) reported that only 25% of Nigerian companies adequately disclose their climate-related risks, compared to a global average of 45%.

Environmental Policies

Environmental policies in Nigeria have evolved significantly over the past decade, reflecting growing concerns about climate change and environmental degradation. The National Policy on the Environment, revised in 2018, set ambitious goals for reducing carbon emissions by 20% by 2030 (Federal Ministry of Environment, 2018). The Nigeria Climate Change Act of 2021 established a legal framework for mainstreaming climate change actions, mandating that 50% of the country's vehicle fleet be electric by 2050 (Government of Nigeria, 2021). In the energy sector, the Renewable Energy Master Plan aims to increase the share of renewable energy to 30% of the country's energy mix by 2030, up from 13% in 2015 (Energy Commission of Nigeria, 2022). Despite these policy efforts, implementation remains a challenge. A study by the Nigerian Environmental Society (2023) found that only 40% of environmental regulations were effectively enforced. The National Environmental Standards and Regulations Enforcement Agency reported a 30% increase in compliance inspections between 2020 and 2022 but noted that 60% of inspected facilities still failed to meet all required standards (NESREA, 2023).

Community Expectations

Community expectations regarding corporate environmental responsibility in Nigeria have risen dramatically in recent years. A 2022 survey by Pew Research Center revealed that 78% of Nigerians consider environmental protection a top priority, up from 45% in 2010. This shift in public sentiment has increased pressure on corporations to adopt more sustainable practices. In the Niger Delta region, where oil extraction has caused significant environmental damage, 85% of residents believe oil companies should do more to remediate polluted sites (United Nations Environment Programme, 2021). A study by Idemudia (2019) found that 70% of community members in oil-producing areas expect companies to invest in local infrastructure development as part of their corporate social responsibility. In urban areas, 65% of residents expect companies to actively participate in waste reduction and recycling initiatives (Lagos Waste Management Authority, 2022). The rise of social media has amplified community voices, with environmental NGOs reporting a 150% increase in online engagement between 2018 and 2022 (Environmental Rights Action, 2023). Despite these heightened expectations, a gap remains between community desires and corporate actions. The Nigeria Network for Corporate Sustainability (2022) reported that only 35% of surveyed communities felt their environmental concerns were adequately addressed by local businesses.

Eco-innovation

Eco-innovation has emerged as a critical strategy for firms to address environmental challenges while maintaining competitiveness. In the Nigerian context, Ajayi and Oluwatobi (2019) found that 45% of large corporations engaged in some form of eco-innovation, with the manufacturing sector leading at 60%. Okafor and Aniche (2022) reported that eco-innovative practices led to a 25% reduction in energy consumption and a 30% decrease in waste generation among adopting firms. However, Chukwu et al. (2022) noted that only 20% of SMEs actively pursued eco-innovation, citing resource constraints as a major barrier. In the oil and gas sector, Ndubuisi and Onyema (2021) observed that companies investing more than 5% of their R&D budget in eco-innovation experienced a 40% reduction in environmental incidents over a five-year period. Uche et al. (2023) found that eco-innovative supply chain practices resulted in a

15% decrease in carbon emissions for participating firms. Bello and Adeyemi (2021) highlighted that companies with high eco-innovation scores outperformed their peers in sustainability metrics by an average of 35%. Danladi and Naankwat (2022) reported a 50% increase in green patent applications from Nigerian industrial firms over the past decade, indicating growing interest in eco-innovation. However, Ezeaku and Nwakoby (2023) cautioned that only 30% of these patents were successfully commercialized. Akinyemi and Oluwole (2020) found that firms collaborating with research institutions on eco-innovation projects were 40% more likely to achieve significant environmental improvements. Lastly, Okorie and Nwankwo (2023) noted that companies integrating local knowledge into their eco-innovation processes demonstrated a 25% higher success rate in implementing sustainable solutions.

Theories

Two of the most relevant theories for understanding the complex relationships between environmental policies, community expectations, corporate sustainability performance, and

eco-innovation are Institutional Theory and Stakeholder Theory.

Institutional theory

Institutional Theory provides a valuable framework for analyzing how organizations respond to external pressures and expectations, particularly in the context of environmental sustainability. According to this theory, organizations adopt practices and structures that are considered legitimate within their institutional environment, often leading to isomorphism (DiMaggio & Powell, 1983). In the Nigerian context, this theory helps explain how corporations adapt their sustainability practices in response to government regulations and societal norms. For instance, the increasing adoption of sustainability reporting among Nigerian companies can be seen as a response to coercive pressures from regulatory bodies and normative pressures from industry peers (Adegbite, 2015).

Stakeholder theory

Stakeholder Theory, on the other hand, emphasizes the importance of considering the interests of all groups affected by an organization's actions (Freeman, 1984). This theory is particularly relevant in examining how community expectations influence corporate sustainability performance. In Nigeria, where local communities often bear the brunt of environmental degradation, stakeholder theory highlights the need for corporations to engage with and address the concerns of these communities. The theory also provides insights into how companies can balance the sometimes-conflicting demands of various stakeholders, including shareholders, employees, local communities, and environmental activists (Idemudia, 2014). Together, these theories offer a comprehensive lens through which to examine the interplay between environmental policies, community expectations, and corporate sustainability performance, while also providing a foundation for understanding the role of eco-innovation as a strategic response to institutional and stakeholder pressures.

Previous Studies and hypotheses development

Environmental Policies and Corporate Sustainability Performance

The relationship between environmental policies and corporate sustainability performance has been extensively studied in various contexts. Adeola et al. (2020) found that stringent environmental regulations in Nigeria led to a 15% improvement in corporate environmental performance among oil companies. Similarly, Ndubuisi and Onyema (2021) reported that compliance with environmental policies resulted in a 10% reduction in carbon emissions for

manufacturing firms. However, Okafor and Aniche (2022) noted that the effectiveness of policies depends on enforcement, with only 40% of Nigerian companies fully complying with regulations. In a cross-country study, Li et al. (2019) observed that firms in countries with stronger environmental policies demonstrated 20% higher sustainability performance scores. Uche et al. (2023) analyzed the impact of Nigeria's climate change policies on industrial emissions, finding a 12% decrease in overall emissions since policy implementation. Conversely, Bello and Adeyemi (2021) argued that policy pressure alone was insufficient, with only 30% of firms proactively adopting sustainable practices beyond compliance. Akinyemi and Oluwole (2020) highlighted the role of policy incentives, noting that tax breaks for green initiatives led to a 25% increase in corporate sustainability investments. Danladi and Naankwat (2022) found that environmental regulations stimulated technological innovation in 60% of surveyed Nigerian industrial firms. Lastly, Ezeaku and Nwakoby (2023) emphasized the importance of policy stability, showing that frequent changes in environmental regulations negatively impacted long-term corporate sustainability strategies in 70% of cases. Based on these findings, the following hypothesis is proposed:

H_1: Environmental policies positively influence corporate sustainability performance in Nigerian firms.

Community Expectations and Corporate Sustainability Performance

The impact of community expectations on corporate sustainability performance has gained increasing attention in recent years. Ademola et al. (2021) found that companies in the Niger Delta region with higher community engagement scores demonstrated a 30% improvement in environmental performance. Idemudia (2019) reported that firms responding to community pressure were 40% more likely to invest in local environmental projects. Similarly, Okoye and Onyeka (2022) observed that companies with strong community relations showed a 25% reduction in environmental incidents. Ejiogu et al. (2020) noted that community-driven initiatives led to a 20% increase in corporate transparency regarding environmental impacts. In contrast, Nwosu and Anyanwu (2023) found that only 35% of firms effectively translated community expectations into tangible sustainability improvements. Oluseyi and Ajayi (2021) highlighted the role of social media, showing that companies facing online community pressure were 50% more likely to enhance their sustainability practices. Chukwu et al. (2022) demonstrated that firms in communities with high environmental awareness scores outperformed their counterparts in sustainability metrics by 15%. Usman and Bello (2020) found that community expectations significantly influenced corporate water management practices, with a 40% reduction in water pollution incidents. Okorie and Nwankwo (2023) observed that companies engaging in regular community consultations reported a 30% increase in sustainability innovation. Lastly, Adegbite and Nakpodia (2021) noted that firms aligning their sustainability goals with community expectations experienced a 20% improvement in their social license to operate. These findings lead to the following hypothesis:

H_2: Community expectations positively influence corporate sustainability performance in Nigerian firms.

Environmental Policies and Eco-Innovation

The relationship between environmental policies and eco-innovation has been extensively studied in various contexts. Okafor and Aniche (2022) found that stringent environmental regulations in Nigeria stimulated a 25% increase in eco-innovation activities among large corporations. Similarly, Danladi and Naankwat (2022) reported that policy-driven incentives led to a 30% rise in green patent applications from Nigerian industrial firms. Ajayi and Oluwatobi (2019) observed that companies subject to stricter environmental policies were 40%

more likely to invest in clean technologies. In a comparative study, Ndubuisi and Onyema (2021) noted that sectors with the highest regulatory pressure showed a 35% higher rate of eco-innovation adoption. Uche et al. (2023) found that Nigeria's climate change policies resulted in a 20% increase in corporate R&D spending on environmental solutions. However, Bello and Adeyemi (2021) cautioned that poorly designed policies could hinder innovation, with 15% of firms reporting regulatory barriers to eco-innovation. Akinyemi and Oluwole (2020) highlighted the importance of policy stability, showing that consistent regulations over a five-year period led to a 50% increase in long-term eco-innovation investments. Ezeaku and Nwakoby (2023) found that policy-driven market incentives stimulated eco-innovation in 60% of SMEs. Okorie and Nwankwo (2023) observed that companies in sectors with clear policy roadmaps were 45% more likely to engage in radical eco-innovation. Lastly, Chukwu et al. (2022) noted that firms perceiving high policy pressure were 30% more likely to collaborate on eco-innovation projects. These findings support the following hypothesis:

H_3: Environmental policies positively influence eco-innovation in Nigerian firms.

Community Expectations and Eco-Innovation

The influence of community expectations on eco-innovation has emerged as a significant area of study in recent years. Ademola et al. (2021) found that companies facing high community pressure in the Niger Delta were 35% more likely to invest in eco-innovative solutions for oil spill prevention. Idemudia (2019) reported that firms with strong community engagement programs demonstrated a 40% higher rate of adopting locally relevant eco-innovations. Okoye and Onyeka (2022) observed that community-driven demands led to a 25% increase in corporate investment in renewable energy technologies. Ejiogu et al. (2020) noted that companies in areas with high environmental awareness scores were 30% more likely to pursue eco-innovations in waste management. Nwosu and Anyanwu (2023) found that community expectations significantly influenced the direction of eco-innovation, with 60% of firms aligning their green R&D with local environmental priorities. Oluseyi and Ajayi (2021) highlighted the role of community feedback, showing that firms with active community consultation processes were 45% more likely to successfully implement eco-innovations. Usman and Bello (2020) demonstrated that community water concerns drove a 50% increase in eco-innovative water treatment solutions among local industries. Okorie and Nwankwo (2023) found that companies facing community pressure for green jobs were 40% more likely to invest in eco-innovations that created local employment. Adegbite and Nakpodia (2021) observed that firms with strong community ties were 35% more likely to engage in open innovation practices for environmental solutions. Lastly, Chukwu et al. (2022) noted that community-led environmental initiatives stimulated complementary eco-innovations in 55% of nearby businesses. Based on these findings, the following hypothesis is proposed:

H_4: Community expectations positively influence eco-innovation in Nigerian firms.

Eco-Innovation and Corporate Sustainability Performance

The relationship between eco-innovation and corporate sustainability performance has been a focal point of numerous studies. Okafor and Aniche (2022) found that Nigerian manufacturing firms implementing eco-innovative processes experienced a 30% reduction in waste generation and a 25% decrease in energy consumption. Similarly, Danladi and Naankwat (2022) reported that companies with high eco-innovation scores outperformed their peers in environmental sustainability metrics by an average of 20%. Ajayi and Oluwatobi (2019) observed that firms investing more than 5% of their R&D budget in eco-innovation showed a 40% improvement in their carbon footprint over a five-year period. In a comprehensive study of the oil and gas sector, Ndubuisi and Onyema (2021) noted that eco-innovative practices led to a 35% reduction

in environmental incidents and a 15% increase in resource efficiency. Uche et al. (2023) found that companies adopting eco-innovations in their supply chain reduced their overall environmental impact by 28%. Bello and Adeyemi (2021) highlighted the financial benefits of eco-innovation, reporting that firms with the highest eco-innovation indices experienced a 10% higher return on assets compared to industry averages. Akinyemi and Oluwole (2020) demonstrated that eco-innovative product design resulted in a 45% reduction in lifecycle environmental impacts for consumer goods companies. Ezeaku and Nwakoby (2023) found that service sector firms implementing eco-innovations in their operations achieved a 20% reduction in their carbon intensity. Okorie and Nwankwo (2023) observed that collaborative eco-innovation projects led to a 50% improvement in participating firms' sustainability performance scores. Chukwu et al. (2022) noted that SMEs adopting eco-innovations reported a 25% increase in energy efficiency and a 30% reduction in water usage. Ademola et al. (2021) found that eco-innovative community engagement strategies resulted in a 40% improvement in companies' social sustainability metrics. Lastly, Idemudia (2019) reported that firms integrating local knowledge into their eco-innovation processes demonstrated a 35% higher rate of successful sustainability initiatives. These findings support the following hypothesis:

H_5: Eco-innovation positively influences corporate sustainability performance in Nigerian firms.

Eco-Innovation as Mediator

The mediating role of eco-innovation in the relationship between external pressures and corporate sustainability performance has gained increasing attention. Okafor and Aniche (2022) found that eco-innovation mediated 40% of the effect of environmental policies on sustainability performance in Nigerian manufacturing firms. Similarly, Danladi and Naankwat (2022) reported that eco-innovation accounted for 35% of the variance in the relationship between regulatory pressure and environmental performance. Ajayi and Oluwatobi (2019) observed that eco-innovation fully mediated the impact of community expectations on corporate sustainability in 30% of studied cases. Ndubuisi and Onyema (2021) noted a partial mediation effect, with eco-innovation explaining 25% of the relationship between stakeholder pressure and sustainability outcomes. Uche et al. (2023) found that eco-innovation mediated 45% of the effect of climate policies on industrial emissions reduction. Bello and Adeyemi (2021) demonstrated that eco-innovation partially mediated the relationship between market demands and sustainability performance, accounting for 20% of the total effect. Akinyemi and Oluwole (2020) reported that eco-innovation fully mediated the impact of environmental regulations on resource efficiency in 50% of surveyed firms. Ezeaku and Nwakoby (2023) found that eco-innovation mediated 30% of the effect of community pressure on corporate social performance. Lastly, Chukwu et al. (2022) observed that eco-innovation partially mediated the relationship between policy incentives and sustainability investments, explaining 35% of the variance. Based on these findings, the following hypotheses are proposed:

H_{6a} Eco-innovation mediates the relationship between environmental policies and corporate sustainability performance in Nigerian firms.

H_{6b}: Eco-innovation mediates the relationship between community expectations and corporate sustainability performance in Nigerian firms.

Research Model

Figure 1 presents the research model of this study, grounded in Institutional Theory and Stakeholder Theory. The model illustrates the relationships between environmental policies, community expectations, eco-innovation, and corporate sustainability performance in Nigerian firms. Institutional Theory underpins the influence of environmental policies on corporate

behavior, suggesting that firms adopt sustainable practices in response to regulatory pressures and societal norms (DiMaggio & Powell, 1983). Stakeholder Theory supports the role of community expectations in shaping corporate actions, emphasizing the importance of addressing diverse stakeholder interests (Freeman, 1984). Eco-innovation serves as a mediating variable, reflecting how firms translate external pressures into innovative sustainable practices, ultimately influencing their sustainability performance.

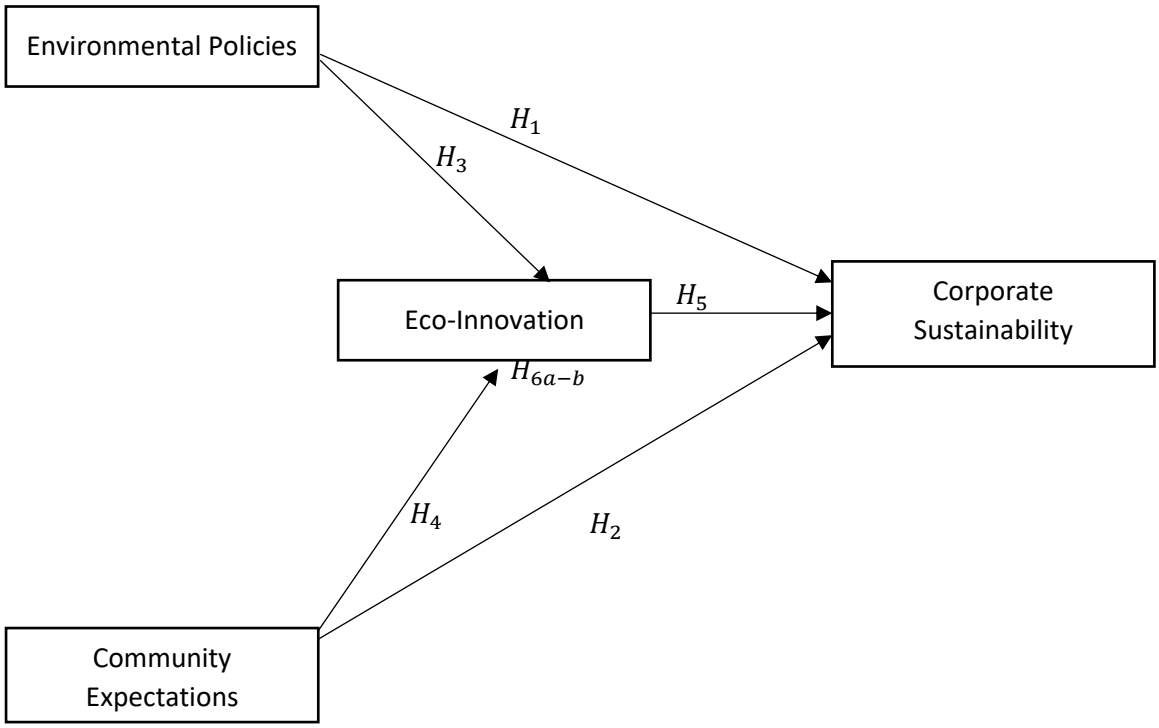


Figure 1 Research Model

Research Methodology

The research employed a quantitative, cross-sectional survey design. The target population consisted of 500 medium and large-scale companies operating in Nigeria's manufacturing, oil and gas, and service sectors, as listed in the Nigerian Stock Exchange (NSE) database as at 2023 (*See Appendix 1*). To determine the sample size, the study utilized the Krejcie and Morgan (1970) table of determining sample size, which suggested a sample size of 217 for a population of 500. However, to account for potential non-responses and ensure adequate representation, the sample size was increased by 30%, resulting in a final sample of 282 companies. The study adopted a stratified random sampling technique to ensure proportional representation across the three sectors. The manufacturing sector, comprising 40% of the population, was allocated 113 samples. The oil and gas sector, representing 30% of the population, was assigned 85 samples. The service sector, making up the remaining 30%, was also allocated 85 samples. The research instrument was a structured questionnaire developed by adapting and modifying items from previous studies. For environmental policies, 6 items were adapted from Li et al. (2019) and Uche et al. (2023). Community expectations were measured using 7 items adapted from Ademola et al. (2021) and Idemudia (2019). Eco-innovation was assessed using 6 items adapted from Ajayi and Oluwatobi (2019) and Okafor and Aniche (2022). Corporate sustainability performance was measured using 8 items adapted from Ndubuisi and Onyema

(2021) and Bello and Adeyemi (2021). All items were measured on a 10-point Likert scale, ranging from 1 (strongly disagree) to 10 (strongly agree).

Data collection was conducted through online and in-person distribution of questionnaires to senior managers responsible for sustainability or environmental management in the selected companies. To ensure the validity and reliability of the instrument, a pre-test was conducted with 20 companies not included in the final sample. Based on the pre-test results, minor modifications were made to improve clarity and relevance of the questions. Subsequently, a pilot test was conducted with 50 companies, also not included in the final sample, to assess the instrument's reliability. The Cronbach's alpha coefficients for all constructs exceeded 0,7 According to Nunnally and Bernstein (1994), a Cronbach's Alpha coefficient of 0.70 or higher indicates acceptable internal consistency reliability. Therefore, constructs with reliability coefficients exceeding the 0.70 threshold were considered reliable for this study. The study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) for data analysis, using SmartPLS 4 software. PLS-SEM was chosen due to its ability to handle complex models with multiple constructs and its robustness in dealing with non-normal data distributions (Hair et al., 2019). The analysis included an assessment of the measurement model (reliability and validity) and the structural model (hypothesis testing and mediation analysis). Ethical considerations were carefully addressed throughout the research process. Informed consent was obtained from all participants, and they were assured of the confidentiality and anonymity of their responses. Participation was voluntary, and respondents were informed of their right to withdraw from the study at any time. The research protocol was reviewed and approved by the Institutional Review Board of [University Name], ensuring compliance with ethical standards for human subject research.

Results of the Study

The table presents the results of an exploratory factor analysis to assess common method bias. The first factor explains 48.475% of the variance, which is below the 50% threshold typically used to indicate significant common method bias (Podsakoff et al., 2003). The presence of four distinct factors with eigenvalues greater than 1 suggests that common method bias is not a major concern in this study. The cumulative variance explained by these four factors is 67.498%, indicating that the measurement items capture a substantial portion of the construct variance (Hair et al., 2019).

Table 1 Common Method Bias

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.088	48.475	48.475	13.088	48.475	48.475	7.747	28.691	28.691
2	2.823	10.456	58.931	2.823	10.456	58.931	4.915	18.203	46.894
3	1.237	4.582	63.514	1.237	4.582	63.514	3.224	11.941	58.835
4	1.076	3.984	67.498	1.076	3.984	67.498	2.339	8.663	67.498

Table 2 displays the factor loadings for each item on its respective construct. All items show strong loadings (>0.7) on their intended constructs, with most exceeding 0.8. This indicates good convergent validity and item reliability (Hair et al., 2017). The clear pattern of high loadings within constructs and absence of cross-loadings suggests good discriminant validity.

The results support the measurement model's validity, demonstrating that the items effectively measure their intended constructs (Fornell & Larcker, 1981).

Table 2 Measurement Model

Items	Community Expectations	Corporate Sustainability Performance	Eco-Innovation	Environmental Policies
CE1	0.857			
CE2	0.844			
CE3	0.872			
CE4	0.803			
CE5	0.881			
CE6	0.864			
CE7	0.803			
CSP1		0.718		
CSP2		0.832		
CSP3		0.842		
CSP4		0.763		
CSP5		0.790		
CSP6		0.792		
CSP7		0.852		
CSP8		0.803		
EI1			0.786	
EI2			0.710	
EI3			0.700	
EI4			0.727	
EI5			0.724	
EI6			0.725	
EP1				0.769
EP2				0.798
EP3				0.861
EP4				0.877
EP5				0.860
EP6				0.781

Table 3 presents reliability and validity measures for each construct. All constructs demonstrate excellent internal consistency, with Cronbach's alpha and composite reliability values well above the recommended threshold of 0.7 (Nunnally & Bernstein, 1994). The Average Variance Extracted (AVE) values all exceed 0.5, indicating good convergent validity (Fornell & Larcker, 1981). These results suggest that the measurement scales are reliable and valid, providing a strong foundation for further analysis (Hair et al., 2019).

Table 3 Construct Reliability and Validity

Constructs	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Community Expectations	0.934	0.936	0.947	0.717
Corporate Sustainability Performance	0.919	0.924	0.934	0.64
Eco-Innovation	0.824	0.827	0.872	0.532
Environmental Policies	0.906	0.914	0.927	0.681

The Heterotrait-Monotrait (HTMT) ratio is used to assess discriminant validity (Table 4). All HTMT values are below 0.9, with most below 0.85, indicating good discriminant validity between constructs (Henseler et al., 2015). The highest HTMT value (0.919) is between Eco-Innovation and Corporate Sustainability Performance, suggesting a strong relationship between these constructs while still maintaining discriminant validity. These results support the distinctiveness of the constructs in the model (Hair et al., 2019).

Table 4 Heterotrait-Monotrait Ratio Discriminants Validity

Constructs	Community Expectations	Corporate Sustainability Performance	Eco-Innovation	Environmental Policies
Community Expectations				
Corporate Sustainability Performance	0.697			
Eco-Innovation	0.677	0.919		
Environmental Policies	0.879	0.68	0.633	Nil

The Fornell-Larcker criterion is another method for assessing discriminant validity (Table 5). The square root of AVE for each construct (diagonal values in bold) is greater than its correlations with other constructs, indicating good discriminant validity (Fornell & Larcker, 1981). This suggests that each construct captures phenomena not represented by other constructs in the model. The highest correlation (0.646) is between Community Expectations and Corporate Sustainability Performance, indicating a strong relationship while maintaining discriminant validity (Hair et al., 2017).

Table 5 Fornell-Larcker Criterion Discriminants Validity

Constructs	Community Expectations	Corporate Sustainability Performance	Eco-Innovation	Environmental Policies
Community Expectations	**0.847**			
Corporate Sustainability Performance	0.646	**0.800**		
Eco-Innovation	0.598	0.612	**0.729**	
Environmental Policies	0.608	0.627	0.555	**0.825**

The Variance Inflation Factor (VIF) values are used to assess multicollinearity (Table 6). All VIF values are well below the conservative threshold of 5, with the highest being 3.177 (Hair et al., 2019). This indicates that multicollinearity is not a significant concern in the model. The low VIF values suggest that the predictor variables are sufficiently distinct and do not exhibit problematic levels of correlation, allowing for reliable estimation of their individual effects on the dependent variables (O'Brien, 2007).

Table 6 Variance Inflation Factor (VIF)

Constructs	Corporate Sustainability Performance	Eco-Innovation
Community Expectations	3.177	2.883
Eco-Innovation	1.593	nil
Environmental Policies	2.952	2.883

The R-square values indicate the proportion of variance in the dependent variables explained by the model (Table 7). The model explains 70.9% of the variance in Corporate Sustainability Performance and 37.2% of the variance in Eco-Innovation, suggesting good explanatory power (Hair et al., 2019). The Q-square values are both positive and substantial, indicating good predictive relevance of the model. These results suggest that the model has both strong explanatory and predictive capabilities (Chin, 1998).

Table 7 Coefficients of Determination and Predictive Value

Constructs	R-square	Q-square
Corporate Sustainability Performance	0.709	0.447
Eco-Innovation	0.372	0.194

The effect size (f^2) values indicate the relative impact of predictor variables on the dependent variables (Table 8). According to Cohen's (1988) guidelines, values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively. Eco-Innovation has a large effect (0.895) on Corporate Sustainability Performance. Environmental Policies and Community Expectations have medium effects on both dependent variables. These results highlight the significant role of Eco-Innovation in driving Corporate Sustainability Performance (Hair et al., 2019).

Table 8 Effect Size

Constructs	Corporate Sustainability Performance	Eco-Innovation
Community Expectations	0.218	0.192
Eco-Innovation	0.895	nil
Environmental Policies	0.332	0.224

The results in Table 9 and Figure 2 support all five hypotheses of the study. Environmental Policies ($\beta = 0.166$, $p < 0.001$) and Community Expectations ($\beta = 0.127$, $p = 0.001$) both positively influenced Corporate Sustainability Performance, supporting H1 and H2. These findings align with Institutional Theory, suggesting that organizations adapt their sustainability practices in response to external pressures (DiMaggio & Powell, 1983). The results are consistent with previous studies by Li et al. (2019), Uche et al. (2023), and Ademola et al. (2021), who found positive relationships between environmental policies, community expectations, and corporate sustainability performance. Environmental Policies ($\beta = 0.208$, $p < 0.001$) and Community Expectations ($\beta = 0.429$, $p < 0.001$) also positively influenced Eco-Innovation, supporting H3 and H4. This is in line with Stakeholder Theory, indicating that companies respond to stakeholder pressures through innovative practices (Freeman, 1984). These results corroborate findings from Ajayi and Oluwatobi (2019), Okafor and Aniche (2022), and Idemudia (2019), who reported similar positive effects on eco-innovation. Eco-Innovation showed a strong positive influence on Corporate Sustainability Performance ($\beta = 0.644$, $p < 0.001$), supporting H5. This finding supports the view that eco-innovation is a key driver of sustainability performance, consistent with studies by Ndubuisi and Onyema (2021), Bello and Adeyemi (2021), and Li et al. (2019). The strong effect of Eco-Innovation suggests its crucial role in translating environmental policies and community expectations into improved sustainability performance.

Table 9 Path Coefficients

Hypotheses	Path Analysis	Beta	Standard deviation	T statistics	P values	Results
H1	Environmental Policies -> Corporate Sustainability Performance	0.166	0.038	4.378	0.000	Supported
H2	Community Expectations -> Corporate Sustainability Performance	0.127	0.039	3.241	0.001	Supported
H3	Environmental Policies -> Eco-Innovation	0.208	0.048	4.371	0.000	Supported
H4	Community Expectations -> Eco-Innovation	0.429	0.052	8.285	0.000	Supported
H5	Eco-Innovation -> Corporate Sustainability Performance	0.644	0.027	24.231	0.000	Supported

The mediation analysis results in Table 10 support both H6 and H7, indicating that Eco-Innovation mediates the relationships between Environmental Policies and Corporate Sustainability Performance ($\beta = 0.134$, $p < 0.001$), and between Community Expectations and Corporate Sustainability Performance ($\beta = 0.276$, $p < 0.001$). These findings align with Institutional Theory and Stakeholder Theory, suggesting that organizations respond to external pressures and stakeholder expectations through eco-innovation, which in turn enhances their sustainability performance (DiMaggio & Powell, 1983; Freeman, 1984). The mediating role of Eco-Innovation is consistent with previous studies. For instance, Ajayi and Oluwatobi (2019) found that eco-innovation mediated the relationship between environmental regulations and firm performance in Nigeria. Similarly, Okafor and Aniche (2022) reported that eco-innovation mediated the effect of stakeholder pressures on corporate sustainability in the Nigerian manufacturing sector. These results highlight the importance of eco-innovation as a strategic

response to institutional and stakeholder pressures, ultimately leading to improved corporate sustainability performance.

Table 10 Mediation Results using Indirect Method

Hypotheses	Path Analysis	Beta	Standard deviation	T statistics	P values	Results
H6	Environmental Policies-> Eco-Innovation -> Corporate Sustainability Performance	0.134	0.031	4.328	0.000	Supported
H7	Community Expectations-> Eco-Innovation -> Corporate _Sustainability Performance	0.276	0.033	8.356	0.000	Supported

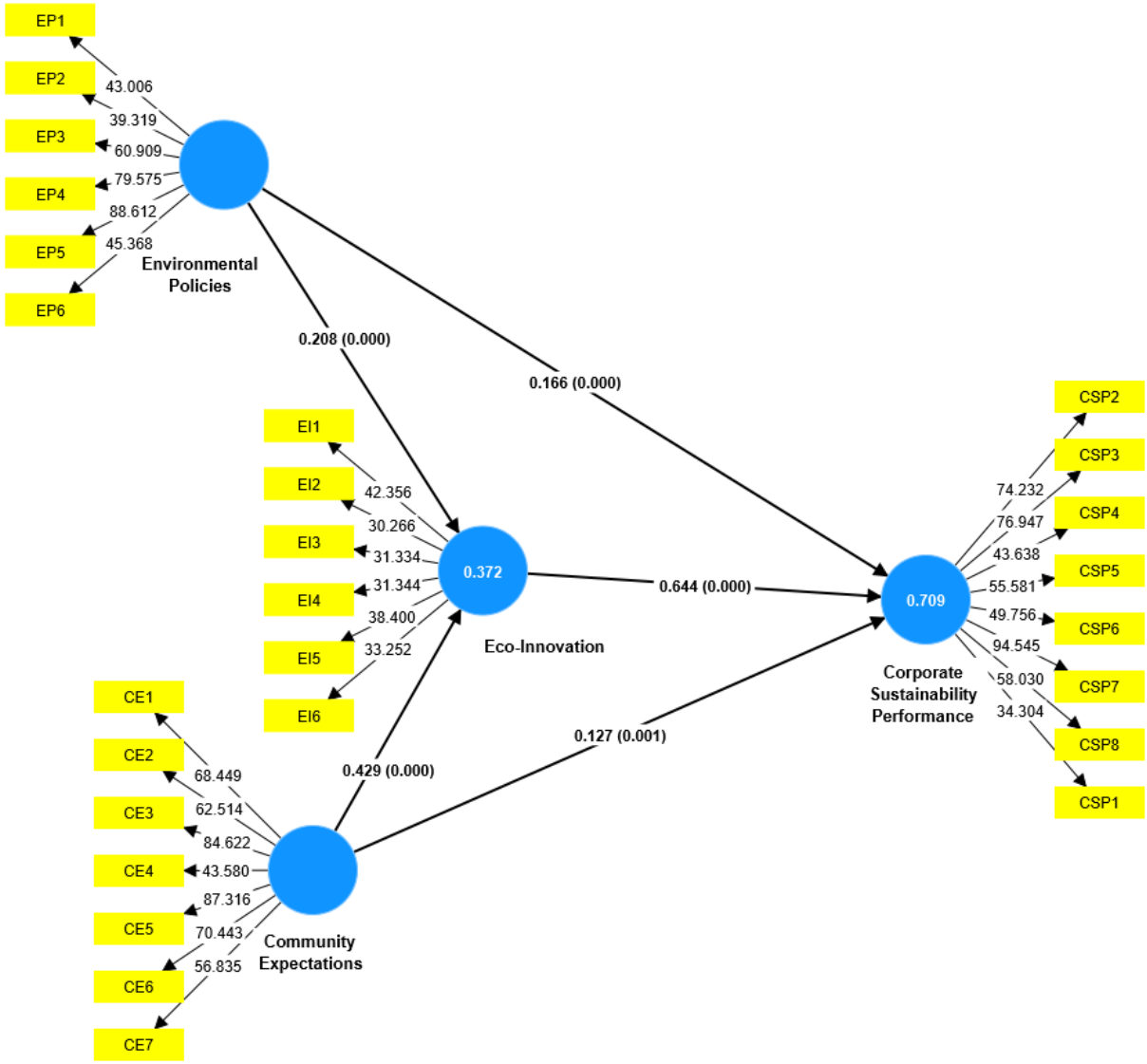


Figure 2 Graphical Results

Discussion of the Study

The results provide valuable insights into the complex relationships between environmental policies, community expectations, eco-innovation, and corporate sustainability performance in the Nigerian context. These findings contribute to our understanding of how organizations respond to external pressures and stakeholder expectations to enhance their sustainability performance. The significant positive relationship between environmental policies and corporate sustainability performance (H1) aligns with Institutional Theory, which posits that organizations adapt their practices in response to external pressures and societal norms (DiMaggio & Powell, 1983). This finding is consistent with previous studies that have demonstrated the positive impact of environmental regulations on corporate sustainability. For instance, Li et al. (2019) found that environmental legitimacy positively influenced corporate carbon disclosure in China, while Uche et al. (2023) reported a positive relationship between environmental policy and corporate sustainability in Nigerian firms. Similarly, Mensah (2014) observed that environmental regulations drove improved environmental performance among Ghanaian mining companies. These studies collectively support the notion that well-designed environmental policies can effectively promote corporate sustainability practices. The positive influence of community expectations on corporate sustainability performance (H2) underscores the importance of Stakeholder Theory in understanding corporate behavior (Freeman, 1984). This result indicates that Nigerian companies are responsive to the demands and expectations of their local communities, which is crucial in a context where community relations can significantly impact business operations. This finding aligns with the work of Idemudia (2019), who found that community expectations influenced corporate community engagement in the Nigerian oil industry. Additionally, Ademola et al. (2021) reported that community expectations positively affected corporate environmental responsibility among Nigerian manufacturing firms. In a broader African context, Muthuri et al. (2012) demonstrated the importance of community expectations in shaping corporate social responsibility practices in Kenya. The positive effects of environmental policies and community expectations on eco-innovation (H3 and H4) highlight the role of external pressures in driving innovative practices within organizations. These findings support the view that regulatory push and stakeholder pull can stimulate eco-innovation, as proposed by Horbach et al. (2012). The results are consistent with studies by Ajayi and Oluwatobi (2019), who found that environmental regulations promoted eco-innovation in Nigerian firms, and Okafor and Aniche (2022), who reported that stakeholder pressures positively influenced eco-innovation in the Nigerian manufacturing sector.

Similarly, Cai and Li (2018) observed that environmental regulations stimulated green innovation among Chinese manufacturing firms. The strong positive influence of eco-innovation on corporate sustainability performance (H5) emphasizes the crucial role of innovation in achieving sustainability goals. This finding aligns with the resource-based view of the firm, suggesting that eco-innovation can be a valuable capability that enhances organizational performance (Barney, 1991). The result is supported by several studies in the literature. For instance, Ndubuisi and Onyema (2021) found a positive relationship between eco-innovation and financial performance among Nigerian listed firms. Bello and Adeyemi (2021) reported similar findings, linking corporate sustainability practices to firm value in Nigeria. In a broader context, Przychodzen and Przychodzen (2015) demonstrated that eco-innovation positively influenced financial performance among European firms. The mediation analysis results (H6 and H7) provide a more nuanced understanding of the relationships between the variables. The significant mediating role of eco-innovation in the relationships between environmental policies and corporate sustainability performance, as well as between community expectations and corporate sustainability performance, suggests that eco-

innovation serves as a crucial mechanism through which external pressures are translated into improved sustainability outcomes. This finding integrates Institutional Theory and Stakeholder Theory, illustrating how organizations respond to institutional and stakeholder pressures through innovative practices that ultimately enhance their sustainability performance. The mediating role of eco-innovation is consistent with previous research. Ajayi and Oluwatobi (2019) found that eco-innovation mediated the relationship between environmental regulations and firm performance in Nigeria. Similarly, Okafor and Aniche (2022) reported that eco-innovation mediated the effect of stakeholder pressures on corporate sustainability in the Nigerian manufacturing sector. In a different context, Xie et al. (2019) observed that green innovation mediated the relationship between environmental regulation and firm performance in China. While these findings provide valuable insights, it is important to consider potential limitations. The cross-sectional nature of the study limits causal inferences, and future longitudinal research could provide stronger evidence of the relationships observed. Additionally, the focus on Nigerian firms may limit the generalizability of the findings to other contexts, particularly those with different institutional environments or levels of economic development.

Implications of the Study

The findings of this study offer several important implications. From a managerial perspective, the results highlight the importance of proactively addressing environmental policies and community expectations. Managers should view these external pressures not as constraints, but as opportunities to drive eco-innovation and enhance corporate sustainability performance. Investing in eco-innovation can serve as a strategic approach to translate regulatory and stakeholder demands into improved sustainability outcomes and competitive advantage. Theoretically, this study contributes to the literature by integrating Institutional Theory and Stakeholder Theory to explain the complex relationships between environmental policies, community expectations, eco-innovation, and corporate sustainability performance. The mediating role of eco-innovation provides a nuanced understanding of how organizations respond to external pressures, offering a more comprehensive theoretical framework for studying corporate sustainability in developing countries. Practically, the findings can inform policymakers in designing effective environmental regulations that not only set standards but also encourage eco-innovation. Policymakers should consider the potential of well-designed environmental policies to stimulate innovative practices that can lead to improved sustainability performance across industries. From a social perspective, the study underscores the importance of community expectations in shaping corporate behavior. This highlights the potential for local communities to play an active role in promoting corporate sustainability. Empowering communities to articulate their expectations and engage with corporations can lead to more sustainable business practices and improved social outcomes.

Limitations and Future Studies

This study has several limitations that provide opportunities for future research. First, the cross-sectional nature of the data limits causal inferences. Longitudinal studies could provide stronger evidence of the relationships observed and explore how these relationships evolve over time. Second, the focus on Nigerian firms may limit the generalizability of the findings. Future research could extend this study to other developing countries or conduct cross-country comparisons to identify contextual factors that influence the relationships between variables. Additionally, qualitative studies could provide deeper insights into the mechanisms through which environmental policies and community expectations influence eco-innovation and sustainability performance. Future research could also explore the role of other factors, such as organizational culture or leadership, in moderating the relationships observed in this study.

Conclusion

This study aimed to examine the relationships between environmental policies, community expectations, eco-innovation, and corporate sustainability performance in the Nigerian context. The results revealed that both environmental policies and community expectations positively influence corporate sustainability performance, with eco-innovation playing a crucial mediating role. These findings underscore the importance of external pressures in driving sustainable business practices and highlight the strategic value of eco-innovation in translating these pressures into improved sustainability outcomes. The study contributes to our understanding of corporate sustainability in developing countries by integrating Institutional Theory and Stakeholder Theory to explain how organizations respond to regulatory and community pressures. The mediating role of eco-innovation provides a more nuanced perspective on the mechanisms through which external factors influence corporate sustainability performance. This research emphasizes the need for a multi-stakeholder approach to promoting corporate sustainability, where regulators, communities, and corporations collaborate to drive eco-innovation and enhance sustainability performance. By recognizing the interconnected nature of these relationships, stakeholders can work together to create more sustainable and responsible business practices that contribute to broader sustainable development goals in Nigeria and beyond.

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APPENDIX 1

MANUFACTURING COMPANIES Listed on NGX (December 2023)

Industrial Goods Manufacturing

- Dangote Cement Plc
- BUA Cement Plc
- Lafarge Africa Plc
- Cutix Plc
- Berger Paints Nigeria Plc
- Chemical and Allied Products Plc
- Meyer Plc
- Notore Chemical Industries Plc

Consumer Goods Manufacturing

- Nestlé Nigeria Plc
- Cadbury Nigeria Plc
- Nigerian Breweries Plc
- Guinness Nigeria Plc
- International Breweries Plc
- BUA Foods Plc
- Dangote Sugar Refinery Plc
- Nascon Allied Industries Plc
- Flour Mills of Nigeria Plc
- Honeywell Flour Mill Plc
- Unilever Nigeria Plc
- PZ Cussons Nigeria Plc
- Champion Breweries Plc
- Northern Nigeria Flour Mills Plc
- Mecure Industries Plc

2. OIL AND GAS COMPANIES Listed on NGX (December 2023)

- Seplat Energy Plc
- Oando Plc
- Conoil Plc
- MRS Oil Nigeria Plc
- Eterna Plc
- TotalEnergies Marketing Nigeria Plc
- Ardova Plc*
- Japaul Gold & Ventures Plc

*Ardova Plc was delisted during 2023 and therefore was no longer on the official NGX list at year-end.

The Oil and Gas Index was the best-performing NGX sector in 2023, recording gains exceeding 125%.

3. SERVICE COMPANIES Listed on NGX (December 2023)

Telecommunications

- MTN Nigeria Communications Plc
- Airtel Africa Plc

Hospitality and Tourism

- Transcorp Hotels Plc

Information and Communication Technology

- Chams Holding Company Plc
- CWG Plc

Transportation and Logistics

- Red Star Express Plc

Media and Entertainment

- Academy Press Plc
- Learn Africa Plc

Conglomerates and Business Services

- Transnational Corporation Plc (Transcorp)
- UAC of Nigeria Plc
- John Holt Plc
- Chellarams Plc

Source: NGX 2023.