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Stakeholder Engagement in Green Energy Governance of Selected Organization in Nigeria

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Abstract

This research investigates the connections among stakeholder engagement, green energy governance and technological innovation in certain Nigerian organizations. Data was gathered using questionnaires from a population of six Nigerian public and private organizations and a sample of 75 using a quantitative research technique. The results provide important new information about how stakeholder engagement influence green energy governance also how technological innovation affects stakeholder engagement and green energy governance. First off, the research shows that stakeholder involvement strongly predicts green energy governance, rejecting the null hypothesis that suggests stakeholder engagement has no bearing on green energy governance. Second, it demonstrates that technical innovation has a major impact on stakeholder participation, with higher levels of engagement being correlated with higher innovation. Finally, the analysis supports the notion that technical innovation has a major impact on the governance of green energy, highlighting the significance of policies that support innovation and development. Generally, the findings highlight how important it is for stakeholders to be involved in the creation of green energy governance in Nigerian organizations, and they have practical implications for practitioners and policymakers who want to encourage sustainability in the energy sector.

Keywords:
Stakeholder Engagement, Collaboration, Communication, Inclusivity, Adaptability, Green Energy Governance and Technological Innovation

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Background to the Study

There is a growing need for effective stakeholder participation in green energy project governance due to the worldwide urgency to move towards more sustainable and ecologically sensitive energy methods. In addition to coping with the negative consequences of climate change, the African powerhouse, Nigeria, must also satisfy its increasing energy demands. This research delves into a detailed examination of stakeholder engagement techniques within a few firms leading Nigeria's green energy scene, acknowledging the importance of stakeholder collaboration in determining the future of green energy governance (Akogun, 2024). Nigeria has set out on a bold path towards a future without carbon emissions, thanks to its plentiful renewable energy resources (World Economic Forum, 2023) and other positive developments. The success and longevity of green energy projects depend on the active participation of several stakeholders, including the public and commercial sectors, as well as communities and non-profits. In order to overcome obstacles to sustainable energy practice adoption, coordinate regulations, and encourage innovation, it is crucial to comprehend the dynamics of stakeholder involvement in this business. In addition, the energy situation is complicated, with substantial rainfall in Nigeria, the most populous and largest economy in Africa dependance on remnant energies. Despite the abundance of natural gas and oil in the country, the social, economic, and environmental costs of relying on these fossil fuels are becoming more widely recognized. So, in line with worldwide sustainability objectives, the Nigerian government has established lofty goals to lessen carbon emanations and upsurge the use of renewable energy. Because of this change, we need to investigate the dynamics of stakeholder involvement in green energy project governance in detail.

The shift to green energy governance, according to Yang & Dodge (2024), may have a major positive socioeconomic impact on the world economy, increasing economic growth, job creation, and human welfare. Furthermore, the main supply of green energy in many modern civilizations still comes from high-carbon, high-pollution energy sources. An extensive variety of companies, as well as local governments, industries, non-governmental establishments, and the private sector, must work together and be committed to green energy initiatives to succeed. In order to steer clear of the complex web of competing interests and guarantee the sustainability and acceptability of green energy projects over the long run, stakeholder involvement is not only strategically necessary but also essential. In order to create policies that work, carry out sustainable projects, and win over important players in Nigeria's energy landscape, it is essential to comprehend the responsibilities, expectations, and concerns of various stakeholders. More than ever, communities must switch to sustainable energy due to climate change, rising energy use, and the depletion of natural resources. But because the shift is happening slowly, something needs to be done to quicken it (Battulg & Dhakal, 2024). A worldwide urgency has emerged to shift from conventional systems to sustainable and green energy options in the face of growing environmental concerns, especially those connected to climate change. The rise in carbon emissions resulting from economic expansion and development also affects Nigeria. Environmental contamination is mostly

caused by energy derived from fossil fuels. One process that might have an impact on energy justice is the conversion of non-renewable energy bases into green energy incomes. The implementation of green energy may enhance social justice by providing greater affordability and accessibility, according to Carley & Konisky (2020) and Ren et al., 2022a, 2022b, and 2022c. Nevertheless, this depends on the geographic location due to the abundance of energy resources and the quality of governance. Fossil fuels are not distributed equally across the globe. There are presently a number of credible empirical narratives on climate change mitigation strategies being offered by specialists in the fields of environmental economics and environmental science. Through an examination of a few chosen organizations engaged in green energy governance in Nigeria, the study seeks to shed light on the complex interactions between the moderating variable of technological innovation, green energy governance metrics (policy frameworks and regulatory environment), and stakeholder engagement dimensions (communication, inclusivity, collaboration, and adaptability). Researchers, industry stakeholders, and policymakers involved in sustainable energy transitions will find great value in the research findings as they advance a more nuanced understanding of the dynamics influencing the intersection of green energy governance, technological innovation, and stakeholder engagement (Deviney et al., 2023).

Research Questions

The linkages between stakeholder participation in the green energy governance of certain Nigerian organizations are further examined by these study subjects. Here are the research questions:

i. What effect does stakeholder engagement have on the creation and design of green energy governance of selected organizations in Nigerian?
ii. How does technological innovation influence stakeholder engagement of selected organizations in Nigerian?
iii. Does technological innovation affect green energy governance of selected organizations in Nigerian?

Research Hypotheses

In light of the study questions mentioned above, the following research hypotheses were proposed:

$H0_1$: Stakeholder engagement does not significantly affect green energy governance.

$H0_2$: There is no significant effect of technological innovation on stakeholder engagement of selected Nigerian organizations.

$H0_3$: Effect of technological innovation does not significantly influence green energy governance of selected organizations in Nigeria.

Literature Review

Stakeholder Engagement (Communication) in Green Energy Governance:

Stakeholder participation in green energy governance requires effective communication as a fundamental component. When it comes to spreading knowledge about policy goals, promoting comprehension among various stakeholders, and creating consensus, communication tactics are essential. The creation and execution of green energy policies may benefit from increased stakeholder trust and collaboration, according to research, through open and honest communication. Assuring those expectations and interests are aligned and promoting informed decision-making in the governance of green energy projects depend on the communication component of stakeholder engagement (Malik et al., 2023). Information sharing and thought exchange, as well as information sharing among groups, constitute communication. Good communication is essential to any organization's success because it fosters the exchange of novel concepts and points of view, avoids misunderstandings, and allows for the honest, transparent, and open discussion of issues. In order to promote peace and increased production, strategic managers in all organizations should value candid and open communication. The Hussain group, 2023. Furthermore, Ahmad & Yulianah (2022) acknowledge that for renewable energy projects to be successful, strong communication is required throughout the project life cycle. In projects, it functions like blood, boosting team members' self-esteem and producing better decision outcomes.

Stakeholder Engagement (Inclusivity) in Green Energy Governance:

Diversity in participation and representation is encouraged by inclusivity, which is acknowledged as a basic component of stakeholder involvement. The concept of inclusive engagement in the context of green energy governance guarantees that the opinions of different stakeholders—communities, non-governmental organizations, and business leaders—are taken into account throughout the creation and execution of policy. Research indicates that guaranteeing the fair distribution of benefits from green energy initiatives and reducing potential conflicts of interest need inclusion. Social variables that affect the effectiveness of green energy governance can be better understood by looking at inclusiveness as a stakeholder engagement component. Interacting with stakeholders who are impacted by the results, whether directly or indirectly, is crucial for making inclusive and well-informed decisions. Everybody with the attention in or investment in a certain scheme or choice can be considered a stakeholder, including people, communities, groups, and organizations. A better outcome and more stakeholder satisfaction can result from decision-makers including stakeholders since they can provide important insights, viewpoints, and knowledge (FasterCapital, 2023).

Stakeholder Engagement (Collaboration) as a Catalyst for Effective Green Energy Governance:

The success of green energy programs is increasingly attributed to stakeholder collaboration. More comprehensive and contextually appropriate policy frameworks are produced through cooperative efforts including public and commercial organizations as well as local communities. Studies demonstrate the complementary advantages of

teamwork in addressing obstacles related to resource acquisition, technological acceptance, and project execution in the green energy industry. Comprehending cooperation as an aspect of stakeholder involvement illuminates the intricate connections that mold the governance framework of sustainable energy projects in Nigeria. In order to ensure that local communities have a role in determining their own energy destiny, collaborative techniques are revolutionizing the renewable energy business. This gives people a sense of empowerment, encourages a sense of ownership, and eventually results in more sustainable and effective enterprises. Fostering cooperation can help accelerate the shift to a more profitable and environmentally friendly future by utilizing the combined knowledge of many stakeholders (Utilities One, 2023).

Stakeholder Engagement (Adaptability) in Dynamic Green Energy Governance:
In the ever-changing field of green energy governance, flexibility in stakeholder interaction is essential. Governance systems' efficacy is influenced by stakeholders' ability to adjust to changing conditions, technological innovations, and stakeholder expectations. Analyzing adaptability as a component of stakeholder engagement offers perspectives on how companies may be proactive in addressing issues, take input into account, and modify plans in order to improve the sustainability and resilience of green energy governance frameworks. As stated by Burrai et al. (2023), the Scottish public sector needs to adopt a more sophisticated and comprehensive approach to adaptation. They stress the significance of awareness-raising, teamwork, a variety of risk assessment techniques, and the establishment of supportive structures as means of advancing climate change adaptation initiatives.

Green Energy Governance (Policy Frameworks and Regulatory Environment)
Green energy governance success is heavily influenced by the caliber and efficacy of policy frameworks and regulatory regimes. Studies show that in order to encourage investment, foster innovation, and guarantee the long-term viability of green energy projects, clear and supportive legislative frameworks are essential. A strong regulatory framework is also essential for maintaining public welfare and striking a balance between industrial interests and environmental concerns. A thorough knowledge of the mechanisms via which stakeholder input impacts Nigeria's governance of green energy is provided by examining the effects of stakeholder involvement on policy frameworks and regulatory settings. The National Policy on the Environment and Guidelines' development has been essential in determining the nation's attitude to environmental concerns, according to Umukoro & Omozue (2022). Still, there are obstacles in the way of implementation, especially given the government's apparent lack of commitment to making sure environmental laws are enforced effectively. Achieving the goals specified in the national environmental strategy requires addressing these obstacles. The governance of green energy in Nigeria is significantly shaped by legal and regulatory frameworks. Implementing sustainable energy projects successfully requires an understanding of current legislation and the ability to spot any shortcomings (Bashi et al., 2023).

Technological Innovation as a Moderating Effect of Stakeholder Engagement (Communication, Inclusivity, Collaboration, and Adaptability) in Green Energy Governance (Policy Framework and Regulatory Environment)

The legislative framework and regulatory environment of green energy governance, as well as stakeholder involvement inside organizations, are significantly shaped by technological innovation. Innovation in technology and stakeholder participation are related in a number of ways, including communication, inclusion, teamwork, and flexibility. Innovation in technology also has an influence on green energy governance, including regulatory frameworks and policy settings. Understanding how technology innovation modifies these factors is critical for sustainable development and efficient energy governance in the context of specific Nigerian organizations.

Technological Innovation and Stakeholder Engagement

Technology breakthroughs have revolutionized stakeholder participation by offering real-time interactive platforms, claim Gonzalez-Porras et al. (2021). Diverse stakeholders can communicate, be inclusive, and work together more easily when they use social media, mobile apps, and online forums.

Organizations using creative solutions can swiftly adjust to shifting stakeholder needs and expectations, according to Sarta et al., (2021), who highpoint the position of adaptable technology in stakeholder engagement.

Inclusivity and Collaboration

The potential of technology to improve inclusion. In order to promote inclusion among stakeholders participating in green energy programs, virtual collaboration tools and internet platforms can span geographic distances (Hung et al., 2021). Bakhtiari et al. (2023) emphasis the significance of technology innovation-driven collaboration platforms in fostering a participatory atmosphere that welcomes input and ideas from stakeholders during the decision-making process.

Adaptability: Organizations using cutting-edge technology, according to Bakhtiari et al. (2023), are better positioned to adjust to changing stakeholder landscapes. Organizations may swiftly modify their strategy in response to stakeholder input and changing market conditions when they possess the capability to analyze real-time data.

Green Energy Governance – Policy Framework and Regulatory Environment

Regulations have an impact on green energy governance; moreover, technological advancements can have an impact on policy frameworks, fostering an atmosphere that encourages the adoption of sustainable energy practices (Botelho et al., 2022). The use of smart technology and data analytics can also improve regulatory enforcement and compliance.

Stakeholder Theory

Stakeholder participation and green energy governance in Nigeria may be successfully reinforced by the Stakeholder Theory. This theory, as suggested by Edward Freeman, emphasizes the significance of understanding and addressing the interests of many stakeholders in organizational decision-making and operations. In the context of stakeholder engagement (communication, inclusion, cooperation, and adaptation), these are crucial elements. Effective communication ensures that stakeholders are well-informed; inclusivity involves engaging a diverse range of stakeholders; collaboration promotes working together towards common goals; and adaptability allows organizations to respond to changing stakeholder needs and external circumstances (Freeman, 1984). However, green energy governance, a thorough policy framework, and a supportive regulatory environment are critical considerations as well. The creation and use of sustainable energy strategies are influenced by these factors. Green energy programs' efficiency and efficacy are greatly increased by the moderating effect of technological progress.

Therefore, in a Nigerian setting, firms may employ stakeholder theory to integrate the qualities of communication, inclusivity, cooperation, and adaptation into their stakeholder engagement strategies. Simultaneously, the theory may assist in the formation and enhancement of green energy governance by highlighting the significance of addressing the interests of all important stakeholders and connecting policies with technical advancements. The idea provides a holistic framework for balancing the interests of stakeholders while supporting sustainable practices in the energy industry.

Empirical Review

Lyulyov et al. (2023) look at ways stakeholders could be more involved in management to increase the company's green competitiveness. The study data was created via a survey that was completed by 75 respondents, all of whom were members of the Ukrainian company's management. In the study, PLS-SEM is used to assess the research hypotheses. The empirical results show that stakeholders' engagement in a company's management has a favorable influence on its green competitiveness. With loading factors of 0.802 and 0.806, respectively, the expertise in settling stakeholder conflicts and interacting with stakeholders had the biggest statistically significant impact on the business's green competitiveness. The findings suggest that in order to improve the company's green competitiveness, management should better comprehend and be aware of the interests and values of its stakeholders and develop targeted stakeholder communications. However, management must also consider the thoughts and opinions of stakeholders while enhancing a company's green competitiveness.

The indirect association was also investigated in the study by taking stakeholder participation into account as a mediating variable. A quantitative approach using a questionnaire survey was adopted, with the target audience being project managers, project engineers, and team leaders involved in geothermal power projects in Pakistan. There were two stages involved in gathering the data. A total of 400 research

questionnaires were issued during the first phase, which ran from August 2022 to December 2022. Of those, 337 were completed (84% completion rate). A total of 350 questionnaires were issued during the second phase, which ran from January 2023 to February 2023. Of them, 255 were completed (73% completion rate). Data were gathered from 592 respondents who were working on renewable energy initiatives in total. Stakeholder involvement is seen as a critical mediating variable in the study's thorough investigation of communication elements and their effects on project success (Malik et al., 2023).

In order to successfully and sustainably build renewable energy projects, Utilities One (2023) firmly believes that cooperative methods, inclusive decision-making techniques, stakeholder involvement through communication, and increasing public participation are essential components. This empirical study highlights the significance of community empowerment, transparency, and accountability. It also emphasizes the need for ongoing efforts to develop inclusive, collaborative ways in the pursuit of a greener and more affluent future. With an emphasis on fitness influencers on Instagram, this study looks at how warmth and competence cues, as well as image- and word-based communication styles, affect stakeholder engagement in the social media space. Through their posts and comments, these influencers generate good interactions and gain followers. The research explores this process. The theoretical framework predicts different outcomes for lower- and higher-engagement behaviors by taking into account variances in how communication styles and perceptions of warmth and competence cues are processed. The research tracks 488 fitness and nutrition entrepreneurs on Instagram over the course of six months. The results show that, whereas words do not significantly correlate with less cognitively demanding engagement-such as follower counts-images do. On the other hand, words show a higher correlation with higher levels of cognitive effort-especially positive interactions-than visuals. Additionally, competence cues and follower counts have a larger positive link than warmth cues; however, competence cues and good interactions do not significantly correlate in this setting.

Ma et al.'s (2023) study examines how the quality of stakeholder relationships affects technical innovation in off-site building (OSC), a widely accepted sustainable building technique. The study offers a multidimensional hypothesis model that incorporates knowledge sharing and technological innovation, focusing on communication, trust, and commitment as aspects of stakeholder relationship quality. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to analyze data from a valid sample of 125 respondents in mainland China. The findings demonstrate how trust and information exchange have a direct impact on technological innovation. Although dedication and communication did not have statistically significant effects on technical innovation, they did have a favorable impact on information sharing. Interestingly, relationship quality and technical innovation are found to be partially and completely mediated by information sharing. The results provide insightful theoretical understandings for OSC technical innovation as well as useful suggestions for interested parties looking to improve innovation via information exchange and high-quality relationships.

The study by Du, Shen, et al. (2023) investigates the connection between green funding, policy, and China's shift to clean energy. The study investigates the transmission mechanisms underpinning this nexus, focusing on the years 2001–2019 and employing data from 30 Chinese provinces to specify a panel threshold regression model using the generalized method of moments (GMM). The results indicate that by raising the proportion of renewable energy in China's total fuel mix, green funding programs significantly contribute to hastening the country's energy sector's change. In areas with healthy marketplaces, this effect is more noticeable. Tests for robustness provide more evidence that this association exists. The study also shows that improved environmental rules and energy efficiency governance favorably attenuate the effect of green funding on the clean energy transition. More specifically.

In 24 African countries between 2001 and 2019, the study examines the impact of established value, renewable energy, fossil fuel energy, financial development, and technical innovation on carbon dioxide (CO2) emissions. The study looks at how variables change over time and how they are related to each other using a second-generation panel method that takes into account differences and any cross-sectional dependence that may still be there. The Commonly Correlated Effects Mean Group (CCEMG) estimate and the Augmented Mean Group (AMG) estimator are two techniques for analysing empirical data. The results show that using renewable energy sources and environmentally friendly technological advancements may significantly lower carbon dioxide emissions. According to Chang et al. (2023), a number of variables, including.

The present empirical study provides significant contributions to the understanding of the intricate correlation between technological innovation and sustainability. It clarifies the distinct functions of organizational innovation and digital entrepreneurship. According to the report, SMEs must have a favorable attitude towards technology innovation in order to promote organizational innovation and consequently support social and environmental sustainability. The practical consequences of these findings for nations and organizations aiming to strategically adopt new technologies and align them with broad eco-friendly and socially sustainable goals are presented (Xiao & Su 2022). The leading role of stakeholders is in the innovation process that allows businesses to be more competitive locally and globally. Finally, big data is the technology that can provide the most significant benefit to MSMEs because it will enable analyzing data of all kinds and contributes disruptively to decision-making (Martínez-Peláez, et al., 2023).

According to Marcon Nora et al. (2023), stakeholder participation in sociotechnical developments in the energy business is made possible by the link between ST and ANT. Using the interplay between the two theories, our goal is to analyze how stakeholders engage in sociotechnical changes within the context of sustainability in the energy business. A review of the story literature was conducted using scientific databases. The results showed that the sociotechnical developments in the energy industry require the involvement of several stakeholders with different interests, and that ST associated with ANT provides a strong basis for this sort of research. The link between the two theories

highlights the importance of science and technology (ST) in promoting cooperation in the domains of clean energy research and technology by providing a theoretical framework for understanding the dynamics of transitions and their multiple routes.

This research aims to investigate the relationship between public policy, sustainability, and technical innovation. The research used in the study was qualitative in nature. During data analysis, methods for obtaining data include listening intently and making notes on relevant information that will be used for data reduction, data visualization, and conclusion writing. The results of the study show how important it is for public policy to support technical innovation and sustainability in order to build a technologically advanced and sustainable future. Mahardhani (2023) asserts that suitable policies have the capacity to stimulate innovation, expedite research and development, and provide human capital with the means to confront rapid technological progress.

Research Methodology:
Research Design: The study used a quantitative research approach, concentrating on data collection using questionnaires. The information was gathered using a cross-sectional method at a particular moment in time.

Population and Sampling: In order to ensure representation from a range of organizational sizes and structures, a stratified random sampling method was employed for both public and private organizations, making a six-target population: Federal Ministry of Environment, Energy Commission of Nigeria, Rural Electrification Agency, University of Port Harcourt, Nigeria Agip Exploration Ltd and others. The following important parties were polled: executives, decision-makers, and pertinent employees. There are sixteen total respondents in the sample size, with two respondents from each organization.

Data Collection: **Survey Instrument**: To collect information on the moderating variable (technology innovation), green energy governance measures (policy framework and regulatory environment), and stakeholder engagement a structured questionnaire was created. Likert scales and closed-ended questions were utilized in the survey to facilitate quantitative analysis.
Pilot testing: To detect and fix any possible problems with clarity and relevance before the main survey, a small sample of people completed a pilot version of the questionnaire.

Measurement Tools: From previously published research, validated scales were developed for each dimension. Perceptions of the connections between these factors were intended to be gathered via the survey questions.

Data Analysis
Descriptive Analysis: Summarizing the sample's demographics and important factors was part of the preliminary study.

Inferential Analysis: Analysis: The hypotheses were tested using statistical methods, including regression analysis. This involves looking at how cooperation, inclusion, communication, and adaptation affect the governance of green energy. In addition, the moderating effect of technological innovation on these associations was investigated using moderation analysis.

Table 1: Statistics Results

		VAR00001	VAR00002	VAR00003	VAR00004	VAR00005	VAR00006	VAR00008
N	Valid	76	76	76	76	76	76	75
	Missing	0	0	0	0	0	0	1
Mean		45.7632	1.3684	1.1842	2.0263	3.0000	3.9737	8.3733
Std. Deviation		8.32645	.48558	.48196	.28160	.76594	1.98645	5.35440
Minimum		30.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum		68.00	2.00	3.00	3.00	4.00	6.00	24.00

The table above represent the demographic information. This provides essential insights into the central tendency, variability, and distribution of the demographic data. The highest mean age is approximately 45.76, indicating the average age within the dataset. The range of 30.00 to 68.00 shows the spread of ages among the individuals surveyed, from the youngest to the oldest. The standard deviation of 8.33 suggests moderate variability in age distribution around the mean.

Table 2: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.649	1	34.649	78.873	.000[b]
	Residual	32.509	74	.439		
	Total	67.158	75			

a. Dependent Variable: VAR00028

b. Predictors: (Constant), VAR00027

The findings of a regression analysis using one predictor variable (VAR00027) and one dependent variable (VAR00028) are summarized in the table that is supplied. A portion of the variation in the dependent variable (VAR00028) is explained by the model. The low p-value (.000b) indicates that the regression model fits the data much better than a model without predictors, indicating that the regression model is statistically significant overall ($p < .05$. The degree to which the independent variable (VAR00027) accurately predicts the dependent variable (VAR00028) is shown by the model's F-statistic (78.873). If a model is statistically significant, its value is compared to a critical value derived from the F-distribution. Given that the regression model is statistically significant, the findings imply that the predictor variable, stakeholder involvement (VAR00027), strongly predicts the dependent variable, green energy governance (VAR00028).

Table 3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.081	.795		.101	.920
	VAR00027	.244	.027	.718	8.881	.000

a. Dependent Variable: VAR00028

The results suggest that VAR00027 is a significant predictor of VAR00028. Each one-unit increase in VAR00027 is associated with a 0.244-unit increase in VAR00028, after controlling for other variables in the model. The intercept, however, is not statistically significant, suggesting that it may not be meaningful in this context.

The following were types of green energy, which most selected public and private organizations in Nigeria engaged in more than one.

1. Solar Energy
2. Wind Energy
3. Hydropower
4. Geothermal Energy
5. Biomass Energy
6. Biofuel Production
7. Tidal and Wave Energy
8. Hydrogen Energy
9. Energy Storage
10. Energy Efficiency
11. Smart Grid
12. Nuclear Energy
13. Carbon Capture and Storage (CCS)
14. Waste-to-Energy
15. Ocean Thermal Energy Conversion (OTEC)

Table 4: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	160.670	1	160.670	28.079	.000[b]
	Residual	423.436	74	5.722		
	Total	584.105	75			

a. Dependent Variable: VAR00027

b. Predictors: (Constant), VAR00029

This table provides information about the overall fit of the model. The regression model is statistically significant with an F-statistic of 28.079 and a p-value < 0.05, indicating that the

independent variable which is technological innovation significantly predicts stakeholder engagement. This implies that the higher the technological innovation, the higher the engagement.

Table 5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	18.840	1.907		9.877	.000
	VAR00029	.753	.142	.524	5.299	.000

a. Dependent Variable: VAR00027

The intercept (Constant) is approximately 18.840.
The coefficient for VAR00029 (technological innovation) is approximately 0.753.
The coefficients standardized to have a mean of 0 and a standard deviation of 1. This shows the comparative importance of each predictor variable. The standardized coefficient (Beta) for VAR00029 is approximately 0.524. The t-value for VAR00029 is approximately 5.299, with a p-value < 0.05, indicating that the coefficient is statistically significant. The regression model with VAR00029 as the predictor significantly predicts VAR00027. In other words, the coefficient for VAR00029 is positive, indicating that as VAR00029 (technological innovation) increases, VAR00027 (Stakeholder engagement) tends to increase as well. The model explains approximately 27.5% of the variance in VAR00027.

Table 6: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.358	1	7.358	9.106	.003[b]
	Residual	59.800	74	.808		
	Total	67.158	75			

a. Dependent Variable: VAR00028
b. Predictors: (Constant), VAR00029

The regression model is statistically significant with an F-value of 9.106 and a p-value (Sig.) of 0.003 ($p < 0.05$). This indicates that the predictor VAR00029 (technological innovation) significantly contributes to predicting VAR00028 (green energy governance). The regression model explains some of the variance in VAR00028, as indicated by the significant F-value and the relatively low p-value. The sum of squares for regression (7.358) is larger than the sum of squares for residuals (59.800), indicating that the predictor VAR00029 explains a significant portion of the variability in VAR00028.

Table 7: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.965	.717		6.926	.000
	VAR00029	.161	.053	.331	3.018	.003

a. Dependent Variable: VAR00028

The constant term (intercept) of approximately 4.965 indicates the expected value of VAR00028 when VAR00029 is zero. The coefficient for VAR00029 (0.161) which infers that for every one-unit increase in VAR00029 (technological innovation), the expected value of VAR00028 (green energy governance increases by approximately 0.161 units. The standardized coefficient (Beta) for VAR00029 (0.331) suggests that VAR00029 has a moderate effect on VAR00028, with one-standard deviation increase in VAR00029 leading to a 0.331 standard deviation increase in VAR00028. Both coefficients are statistically significant, as indicated by the t-values and p-values.

Findings

1. Subsequently the predictor variable stakeholder engagement (VAR00027) has a statistically significant coefficient ($p < .05$), Consequently, the null hypothesis, according to which the coefficient for VAR00027 is equal to zero, is rejected. We get the conclusion that the dependent variable, green energy governance (VAR00028), is strongly predicted by the predictor variable, stakeholder involvement (VAR00027). The above result responds with Lyulyov et al. (2023) who state that the management of the firm should increase understanding and awareness of stakeholder interests and values as well as create focused stakeholder communications in order to increase green competitiveness.

2. According to the data given, the corresponding p-value is less than 0.05, and the F-statistic is 28.079. Our conclusion is that the regression model does not have any predictive value, which is supported by the decision rule. In summary, the regression model generally has statistical significance. Stakeholder involvement appears to be substantially predicted by the independent variable of technical innovation. A regression model consistent with Martínez-Peláez et al. (2023) asserts that stakeholder leadership in the innovation process makes businesses more competitive both locally and globally, with higher levels of technological innovation corresponding to higher levels of engagement.

3. The F-value in the given data is 9.106, and the corresponding p-value is 0.003 ($p < 0.05$). according to the decision-making guideline. The null hypothesis, according to which the regression model lacks predictive ability, is rejected. We get to the statistically significant conclusion that the regression model is. This suggests that the prediction of VAR00028 (green energy governance) is considerably influenced by the predictor VAR00029 (technical innovation). The strong F-value and relatively low p-value of

VAR00028 suggest that the regression model accounts for a portion of the variation in the data. According to Mahardhani's (2023) findings, the sum of squares for regression (7.358) is greater than the sum of squares for residuals (59.800). This is more proof that the predictor VAR00029 explains a lot of the variation in VAR00028. Proper policies can stimulate innovation, expedite R&D, and prepare human capital to meet the rapid pace of technological progress.

Hypotheses

$H0_1$: Stakeholder engagement significantly affect green energy governance of selected organizations in Nigeria.

$H0_2$: There is a significant effect of technological innovation on stakeholder engagement of selected Nigerian organizations.

$H0_3$: Effect of technological innovation significantly influence green energy governance of selected organizations in Nigeria.

Conclusion

The results of this investigation offer significant perspectives on the connections among technology innovation, stakeholder involvement, and green energy governance in particular Nigerian organisations.

Stakeholder Engagement and Green Energy Governance: The research disproves the null hypothesis (H01), which holds that stakeholder participation has little impact on the governance of green energy. Rather, it finds that stakeholder involvement is a strong predictor of green energy governance, highlighting the significance of comprehending and taking into account stakeholder interests and values in organizational operations and decision-making. This result is consistent with earlier studies and emphasizes how important good stakeholder involvement is in advancing green competitiveness.

Technological Innovation and Stakeholder Engagement: Technological innovation is significantly impacted by stakeholder involvement according to the study, which validates the alternative hypothesis (H_2). The study reveals that stakeholders play a vital role in the innovation process, which enables organisations to enhance their competitiveness both domestically and worldwide.

Technological Innovation and Green Energy Governance: The evidence also lends credence to the alternative hypothesis (H_3), which holds that technology innovation has a major impact on green energy governance. It finds that technical innovation has a major role in forecasting the governance of green energy, highlighting the significance of policies that encourage innovation, research and development, and the development of human resources capable of keeping up with rapidly advancing technological advances. The aforementioned discovery highlights the significance of technological innovation in molding sustainable energy methodologies and regulatory structures. The study also reaffirms how crucial it is for Nigerian organizations to promote green energy governance through stakeholder involvement and technical innovation. Organizations may improve

their sustainability efforts and aid in Nigeria's shift to a greener energy landscape by adopting the ideas of stakeholder theory and making use of technology improvements.

Practical Implications

Enhanced Stakeholder Engagement: Stakeholder involvement has a huge influence on green energy governance, which organisations in Nigeria's green energy industry may benefit from knowing. Organisations may enhance the design and execution of green energy governance frameworks by actively incorporating stakeholders in decision-making processes and operations. Regular stakeholder communication, inclusive decision-making procedures, teamwork, and flexibility in response to shifting stakeholder demands and outside conditions might all be part of this.

Embracing Technological Innovation: Organisations have the chance to use technology to improve stakeholder engagement by realizing how technological innovation influences engagement. Using data analytics to understand stakeholder preferences, putting new technology into place to promote collaboration and cooperation among stakeholders, and putting creative communication platforms into practice might all be part of this.

Promoting Sustainable Practices: The results highlight the significance of policies that support technological innovation, R&D, and the training of human resources to keep up with the swiftly evolving state of technology. Together, organisations and legislators may develop regulatory frameworks that encourage creativity and environmentally friendly practices in the green energy industry. This might entail establishing regulations that encourage the use of green technology, funding skill-development initiatives, and offering incentives for research and development.

Strategic Decision-Making: The research underscores the necessity for Nigerian entities to deliberately include technology innovation and stakeholder involvement in their strategy for green energy governance. This includes using technology to increase stakeholder participation, coordinating organizational aims with stakeholder interests, and incorporating sustainability concerns into decision-making processes.

Competitive Advantage: Organisations may obtain a competitive edge in the green energy industry by adopting technology innovation and stakeholder involvement. This might entail establishing a reputation for their brand, drawing in investors and clients that respect sustainability, and establishing themselves as pioneers in the use of eco-friendly products and procedures.

Research for Further Study

Exploring the impact of specific policies and regulatory frameworks on stakeholder engagement, technological innovation, and green energy governance in Nigeria would be valuable. This policy analysis could identify barriers and facilitators to effective governance practices and inform policy recommendations for fostering sustainability in

the energy sector. Perfecting the quantitative findings with qualitative research approaches such as, focus groups interviews, or case studies could offer a deeper understanding of the mechanisms through which stakeholder engagement and technological innovation influence green energy governance. Qualitative research could capture stakeholders' perspectives, experiences, and perceptions in more detail.

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