

Corporate Governance, Institutional Quality, and Firm Performance: A Comprehensive Analysis of the Oil & Gas Sector

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Abstract The analysis explores the relationship between corporate governance, institutional quality, and firm performance in the Nigerian oil & gas sector from 2013 to 2022. The study utilizes secondary data obtained from annual financial statements of selected companies in the sector and the Nigerian Stock Exchange. Descriptive and econometric methods are employed for data analysis. The study utilized multiple theoretical frameworks, including Agency Theory, Stakeholder Theory, Institutional Theory, Resource Dependence Theory, and Transaction Cost Economics, to gain a comprehensive understanding of the topic. The data was analyzed using the Panel Least Square (PLS) method, allowing for a robust examination of the variables' relationships over time. The findings of the study shed light on the unique context of the Nigerian oil & gas sector. One key result was that board independence did not significantly impact firm performance, suggesting that other factors may have a more influential role in determining performance outcomes in the sector. The study's findings indicate that increasing board diversity alone may not lead to significant improvements in revenue and overall performance for oil firms in Nigeria. Another significant finding was a negative relationship between board ownership structure and firm performance. Higher levels of board ownership concentration were associated with decreased revenue for oil firms operating in Nigeria. This highlights the challenges and risks associated with concentrated ownership in the sector. Additionally, the study revealed a negative impact of trade ratings on firm performance. Lower trade ratings were linked to a substantial decrease in revenue for oil firms, emphasizing the importance of considering external market conditions and economic factors when evaluating firm performance in the oil & gas sector. Based on the findings of the study strengthening corporate governance frameworks to ensure independence and effectiveness of boards is recommended. Attention should be given to the ownership structure of oil firms to prevent excessive concentration and promote diversity. Improving trade policies and creating an enabling environment for international trade is crucial for the oil & gas sector's performance.

Keywords: Corporate Governance, Institutional Quality, and Firm Performance, Oil and Gas Sector

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1. Introduction

1.1. Background of the Study

Corporate governance is a fundamental aspect of contemporary business practices, emphasizing the structures and processes through which corporations are directed and controlled. The effectiveness of corporate governance mechanisms plays a crucial role in determining the performance and sustainability of firms [1]. Alongside corporate governance, institutional quality, which encompasses the overall quality of a country's institutions, including legal frameworks, regulatory systems, and political stability, has also been recognized

as a significant factor influencing firm performance [2]. Over the past few decades, some studies have examined the relationship between corporate governance and firm performance, as well as the impact of institutional quality on both corporate governance practices and firm outcomes [3,4,5]. These research endeavors have shed light on the importance of effective corporate governance in enhancing firm performance and the role of institutions in shaping governance structures and processes. Corporate governance mechanisms, such as board independence, transparency, accountability, and shareholder rights, are intended to ensure ethical behavior, mitigate agency problems, and safeguard the interests of various stakeholders. Empirical evidence suggests that well-governed firms tend to exhibit better financial performance, lower levels of risk, and higher market

valuations. Conversely, weak governance practices have been associated with financial irregularities, mismanagement, and poor performance [6]. However, it is increasingly recognized that corporate governance does not exist in isolation but is embedded within a broader institutional context. Institutional quality encompasses a range of factors, such as the rule of law, protection of property rights, contract enforcement, and the effectiveness of regulatory frameworks. Sound institutions provide a supportive environment for well-functioning corporate governance mechanisms, ensuring their proper implementation and effectiveness. Therefore, the interplay between corporate governance and institutional quality becomes a critical avenue for research [5].

Existing studies have explored the relationship between corporate governance, institutional quality, and firm performance from various angles. Some research has focused on specific corporate governance practices and their impact on firm outcomes in different institutional settings. Others have investigated how variations in institutional quality across countries affect the efficacy and relevance of corporate governance mechanisms. Furthermore, there is a growing body of literature examining the mechanisms through which institutional quality influences the relationship between corporate governance and firm performance [6]. This study aims to provide a comprehensive analysis of the complex interrelationships among corporate governance, institutional quality, and firm performance. By integrating and synthesizing existing empirical research, theoretical frameworks, and conceptual insights, it seeks to deepen our understanding of the intricate dynamics between these factors. The study will explore the mediating and moderating effects of institutional quality on the relationship between corporate governance practices and firm performance. The findings of this study will have significant implications for policymakers, corporate boards, investors, and other stakeholders. It will contribute to the ongoing dialogue surrounding corporate governance reforms, highlighting the need for effective institutional frameworks that support transparent, accountable, and responsible corporate practices. Ultimately, the study aims to promote better corporate governance practices, foster a favorable institutional environment, and enhance firm performance in the global business landscape.

1.2. Research Problem

The relationship between corporate governance, institutional quality, and firm performance has been the subject of numerous studies. However, there is a need for a comprehensive analysis that considers the interplay of these factors in a holistic manner. Existing research has often focused on individual aspects or limited geographical contexts, leading to fragmented findings and a lack of generalizability. This research problem seeks to investigate the specific context of the Nigerian oil and gas sector and its implications for corporate governance practices, institutional quality factors, and firm performance outcomes. It aims to identify the key governance mechanisms, such as board composition, ownership structure, and disclosure practices, that influence firm performance in the sector. Additionally, the

study will examine how institutional factors, including government regulations, political stability, and legal frameworks, interact with corporate governance practices to shape firm performance in the Nigerian oil and gas industry [7].

The Nigerian oil and gas sector plays a crucial role in the country's economy, but it has been plagued by challenges related to corporate governance and institutional quality. While several studies have examined the relationship between corporate governance, institutional quality, and firm performance in general contexts, there is a significant gap in understanding how these factors specifically interact within the Nigerian oil and gas sector [8,9]. By conducting a comprehensive analysis in the Nigerian oil and gas sector, this study will contribute to filling the gap in literature by providing insights into the unique challenges and opportunities that influence the relationship between corporate governance, institutional quality, and firm performance in this specific context. The findings can help policymakers, industry practitioners, and regulatory bodies develop targeted interventions and policies that enhance corporate governance practices, improve institutional quality, and ultimately lead to better firm performance within the Nigerian oil and gas sector. Moreover, the study's findings may have broader implications for other emerging markets with similar characteristics and challenges in their oil and gas industries.

1.3. Objectives of the Study

1. To assess the current state of corporate governance practices in the Nigerian oil and gas sector, including board structures, ownership patterns, and disclosure mechanisms.
2. To examine the institutional quality factors that influence corporate governance in the Nigerian oil and gas sector, such as regulatory frameworks, political stability, and legal environment.
3. To analyze the relationship between corporate governance practices and firm performance within the Nigerian oil and gas sector.
4. To investigate the mediating or moderating effects of institutional quality factors on the relationship between corporate governance and firm performance in the Nigerian oil and gas sector.

1.4. Research Hypotheses

These research hypotheses aim to test the relationships between corporate governance, institutional quality, and firm performance in the Nigerian oil and gas sector. Through empirical analysis and statistical testing, the study will evaluate the validity and significance of these hypotheses, contributing to a deeper understanding of the interplay between these variables in the specific context of the Nigerian oil and gas industry.

1. H1: There is a positive relationship between corporate governance practices and firm

performance in the Nigerian oil and gas sector. Specifically, companies with stronger corporate governance mechanisms, such as board independence, ownership concentration, and transparency, will exhibit better financial performance, higher market value, and greater sustainability outcomes.

2. H2: Institutional quality factors significantly influence corporate governance practices in the Nigerian oil and gas sector. Specifically, a supportive regulatory framework, political stability, and effective legal environment will positively impact the adoption and implementation of robust corporate governance practices by oil and gas companies.
3. H3: Institutional quality factors moderate the relationship between corporate governance practices and firm performance in the Nigerian oil and gas sector. Specifically, a favorable institutional environment will strengthen the positive relationship between corporate governance practices and firm performance, whereas a weak institutional environment may weaken or attenuate this relationship.
4. H4: Specific corporate governance mechanisms, such as board composition, executive compensation, and risk management practices, have differential effects on firm performance outcomes in the Nigerian oil and gas sector. The presence of independent directors, appropriate executive compensation structures, and effective risk management strategies will positively influence the financial performance, market value, and sustainability indicators of oil and gas companies.

2. Literature Review

2.1. Conceptual Review

Corporate governance, institutional quality, and firm performance are three interconnected concepts that have received significant attention in academic research and practical decision-making. Understanding their relationships and dynamics is crucial for promoting sustainable and efficient business practices. This conceptual review aims to provide an overview of these concepts and highlight their interplay in shaping the performance of firms [3]. Corporate governance refers to the system of rules, practices, and processes by which companies are directed and controlled. It encompasses the relationships between a company's management, board of directors, shareholders, and other stakeholders. Effective corporate governance promotes transparency, accountability, and ethical behavior, ultimately contributing to the long-term success and performance of a firm. Key elements of corporate governance include board structure and composition, executive compensation, shareholder rights, disclosure practices, and risk management mechanisms [10].

Institutional quality refers to the characteristics and attributes of the institutional environment in which firms operate. It encompasses various factors, such as legal

frameworks, regulations, political stability, government effectiveness, and rule of law. Institutional quality influences the behavior, decision-making, and performance of firms by providing a conducive or constraining environment for business operations. High-quality institutions provide clear and enforceable rules, protect property rights, ensure contract enforcement, and promote a level playing field for firms, fostering trust and confidence in the business environment [11,12]. Firm performance refers to the outcomes and results achieved by a company in relation to its strategic objectives and financial goals. Performance indicators may include financial metrics (e.g., profitability, return on investment), market-based measures (e.g., stock price, market share), non-financial aspects (e.g., customer satisfaction, social and environmental impact), and sustainability outcomes. Firm performance is influenced by a wide range of factors, including internal capabilities, external market conditions, industry dynamics, and the quality of governance and institutions within which the firm operates [13].

The relationship between corporate governance, institutional quality, and firm performance is complex and multidimensional. Research has shown that effective corporate governance practices, such as independent boards, strong shareholder rights, and transparent disclosure mechanisms, can enhance firm performance by aligning the interests of managers and shareholders, reducing agency conflicts, and improving decision-making processes. However, the effectiveness of corporate governance mechanisms may be influenced by the quality of the institutional environment in which firms operate. A favorable institutional context, characterized by sound legal frameworks, effective regulations, and political stability, can reinforce the positive impact of corporate governance practices on firm performance [14]. Conversely, weak corporate governance practices and poor institutional quality can hinder firm performance. Inadequate governance mechanisms, such as board entrenchment, insufficient shareholder protections, or lack of transparency, can lead to agency problems, diminished investor confidence, and ultimately, lower firm performance. Similarly, a weak institutional environment, characterized by corruption, regulatory inefficiencies, or political instability, can undermine the effectiveness of corporate governance practices and impede the growth and performance of firms. To comprehensively analyze the relationships among corporate governance, institutional quality, and firm performance, empirical research employs a variety of methodologies, including quantitative analysis, case studies, and comparative studies across different industries and countries. Such studies aim to provide insights into the specific mechanisms, mediating or moderating factors, and contextual dynamics that shape these relationships [2,15].

In conclusion, corporate governance, institutional quality, and firm performance are interconnected concepts that significantly influence each other in the business landscape. Effective corporate governance practices and high-quality institutions foster transparency, accountability, and trust, positively impacting firm performance. On the other hand, weak governance mechanisms and poor institutional quality can hinder firm performance. Understanding the interplay of these factors

is crucial for policymakers, practitioners, and researchers seeking to enhance business practices, promote sustainable growth, and improve overall economic outcomes.

2.1.1. Board Structures, Regulatory Framework and Financial Performance

The interplay between board structures, regulatory frameworks, and financial performance is influenced by numerous contextual factors that shape the outcomes observed in different settings. Industries with distinct characteristics and competitive dynamics may require specific board structures and governance practices to enhance financial performance. Moreover, the effectiveness of regulatory frameworks can vary across countries due to differences in legal systems, cultural norms, and institutional environments [16]. While existing research has provided valuable insights into the relationship between board structures, regulatory framework, and financial performance, further empirical studies are needed to deepen our understanding and provide more specific insights. These studies should encompass different industries, countries, and firm sizes to capture the diversity of contexts and provide a comprehensive analysis [17,18,19].

Moreover, rigorous analysis is essential to identify the causal relationships and mechanisms at play. This requires careful consideration of research designs, such as longitudinal studies, panel data analysis, or quasi-experimental approaches, to establish robust connections between board structures, regulatory framework, and financial performance. Additionally, the use of advanced statistical techniques, such as instrumental variable analysis or structural equation modeling, can help address endogeneity and provide more reliable conclusions. By conducting further empirical studies and employing rigorous analytical methods, researchers can contribute to a deeper understanding of the complex relationship between board structures, regulatory framework, and financial performance. This knowledge can inform policymakers, regulators, and practitioners in designing effective governance mechanisms and regulatory frameworks that promote positive financial outcomes in various contexts.

2.1.2. Ownership Patterns, Regulatory Framework and Financial Performance

The complex relationship between ownership patterns, regulatory framework, and financial performance has been extensively studied in the literature. Studies have found mixed results regarding the impact of ownership concentration on financial performance. Some research suggests that higher ownership concentration, particularly when it is in the hands of large shareholders or institutional investors, can enhance firm performance by aligning the interests of owners and managers. However, other studies indicate that excessively concentrated ownership may lead to agency problems and entrenchment, which can negatively affect financial performance [2]. Institutional ownership, such as ownership by pension funds, mutual funds, or other institutional investors, has been shown to have a positive influence on firm performance. Institutional investors often bring expertise,

monitoring capabilities, and long-term perspectives to their investments, which can contribute to improved financial performance [8,11,5,10].

The regulatory framework plays a vital role in shaping the relationship between ownership patterns and financial performance. Strong legal and regulatory protections, including effective shareholder rights and enforcement mechanisms, are associated with better financial performance. Robust corporate governance regulations that promote transparency, accountability, and protection of minority shareholders' rights can contribute to enhanced financial [1]. Several moderating factors can influence the relationship between ownership patterns, regulatory framework, and financial performance. These factors include firm size, industry characteristics, country-specific institutional environments, and cultural norms. For example, the impact of ownership patterns on financial performance may vary depending on the industry's competitiveness and the firm's growth opportunities [20].

2.1.3. Disclosure Mechanisms, Regulatory Framework and Financial Performance

The relationship between disclosure mechanisms, regulatory framework, and financial performance is an important area of research in corporate governance and finance. This comprehensive analysis aims to explore the conceptual and empirical aspects of this relationship. Disclosure mechanisms refer to the processes and practices through which firms communicate information to stakeholders, including investors, regulators, and the public. Effective disclosure mechanisms can enhance transparency, reduce information asymmetry, and improve investor confidence, potentially leading to improved financial performance. Research by [21] highlights that firms with high-quality financial reporting and transparent disclosure practices tend to have better financial performance. The regulatory framework plays a crucial role in shaping the disclosure practices of firms. Regulations and standards, such as accounting standards and securities laws, prescribe the information that firms are required to disclose and the manner in which it should be reported. The regulatory framework establishes the minimum disclosure requirements and sets guidelines for the frequency, format, and content of financial reporting. Research by [5] suggests that strong regulatory oversight and enforcement mechanisms are associated with higher quality financial reporting and disclosure practices.

Effective disclosure mechanisms can promote regulatory compliance by providing transparent and reliable information to regulators. When firms adhere to disclosure requirements and provide accurate and timely information, it facilitates regulatory monitoring and enforcement, thereby improving compliance with regulatory standards. Research by [2] indicates that firms with better disclosure practices are less likely to engage in earnings management and other unethical behaviors [15]. There exists a feedback loop between disclosure mechanisms, the regulatory framework, and financial performance. Improved financial performance can create pressure for enhanced disclosure practices and regulatory reforms aimed at increasing transparency and accountability. Conversely, effective regulatory oversight and disclosure requirements can contribute to better

financial performance by enhancing investor confidence and reducing information asymmetry. This feedback loop emphasizes the interdependence and mutual influence between disclosure mechanisms, the regulatory framework, and financial performance [22]. The relationship between disclosure mechanisms, regulatory framework, and financial performance is influenced by contextual factors such as country-specific governance systems, cultural norms, and industry characteristics. Different countries have varying disclosure requirements and regulatory environments, which can shape the effectiveness of disclosure mechanisms and their impact on financial performance. Industry-specific factors, such as the level of competition and the nature of information needs for investors, can also influence the relationship [23].

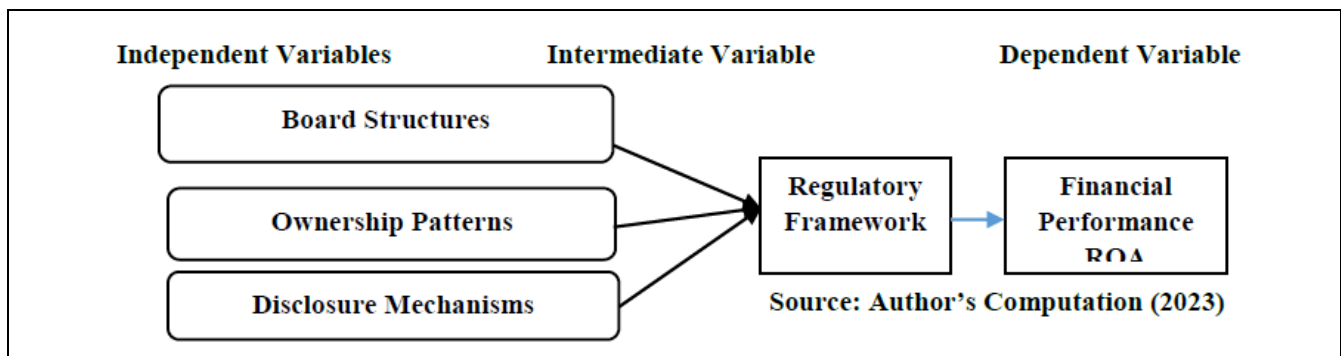
Several mediating factors can influence the relationship between disclosure mechanisms, regulatory framework, and financial performance. For example, the quality of corporate governance practices, including the independence and effectiveness of the board of directors, can mediate the impact of disclosure mechanisms on

financial performance. Moreover, the regulatory environment and enforcement mechanisms can moderate the relationship between disclosure mechanisms and financial performance [4]. It is important to note that the relationship between disclosure mechanisms, regulatory framework, and financial performance is subject to ongoing research and empirical analysis. The specific dynamics and outcomes can vary across industries, countries, and firm contexts. Further studies and rigorous analysis are necessary to deepen our understanding of this complex relationship and provide more specific insights.

2.1.4. Conceptual Framework

In this section, the conceptual framework for this study will be presented diagrammatically below. As an analytical tool with several variations and contexts, the conceptual framework is geared towards making conceptual distinctions and organizing ideas all through the study.

Table 1. Diagrammatic representation of the Conceptual Framework of the study



2.2. Theoretical Review

The relationship between corporate governance, institutional quality, and firm performance is underpinned by several theoretical frameworks and perspectives that provide insights into the mechanisms and dynamics involved. This theoretical review aims to discuss key theoretical perspectives that have guided research in this field.

1. **Agency Theory:** Agency theory provides a foundation for understanding the relationship between corporate governance and firm performance. It emphasizes the separation of ownership and control in corporations, where managers (agents) make decisions on behalf of shareholders (principals). The effectiveness of corporate governance mechanisms, such as board independence, executive compensation, and monitoring mechanisms, is crucial in aligning the interests of managers and shareholders, mitigating agency conflicts, and improving firm performance.
2. **Stakeholder Theory:** Stakeholder theory posits that firms have a broader set of responsibilities beyond just maximizing shareholder value. It recognizes that firms operate within a network of stakeholders, including employees, customers, suppliers, and the

wider society. Effective corporate governance practices consider the interests and needs of various stakeholders, leading to improved relationships, reputation, and ultimately, firm performance.

3. **Institutional Theory:** Institutional theory focuses on the role of institutions in shaping organizational behavior and outcomes. It suggests that firms are influenced by the norms, values, and rules embedded in their institutional environment. Institutional quality, such as the legal framework, regulations, and political stability, provides the foundation for effective corporate governance practices. Firms operating in favorable institutional contexts are more likely to adopt and implement sound governance mechanisms, resulting in improved firm performance.
4. **Resource Dependence Theory:** Resource dependence theory highlights the dependence of firms on external resources and their need to manage relationships with external actors, including regulators, investors, and suppliers. Effective corporate governance practices are seen as mechanisms for securing and maintaining critical resources, such as capital and legitimacy. The quality of institutions plays a significant role in

facilitating or constraining firms' access to resources, thereby influencing firm performance.

5. **Transaction Cost Economics:** Transaction cost economics examines the costs and risks associated with transactions between economic actors. It suggests that effective corporate governance mechanisms, such as clear contracting, monitoring, and control mechanisms, can reduce transaction costs and improve firm performance. Institutional quality factors, such as the legal framework and contract enforcement, are crucial in reducing transaction uncertainties and enhancing firm performance.

These theoretical perspectives provide frameworks for understanding the relationships between corporate governance, institutional quality, and firm performance. They offer insights into the mechanisms through which corporate governance practices and institutional factors influence firm behavior, decision-making processes, and ultimately, performance outcomes. By drawing on these theoretical foundations, researchers can develop hypotheses, design empirical studies, and analyze the complex dynamics involved in these relationships.

It's important to note that these theoretical perspectives are not mutually exclusive and often complement each other. The interplay between corporate governance, institutional quality, and firm performance is influenced by multiple factors and contextual dynamics. Researchers often integrate these theories to provide a comprehensive understanding of the complex relationships in specific industries, countries, or contexts.

In conclusion, theoretical frameworks such as agency theory, stakeholder theory, institutional theory, resource dependence theory, and transaction cost economics contribute to our understanding of how corporate governance, institutional quality, and firm performance are interconnected. By employing these theories, researchers can develop conceptual models, generate testable hypotheses, and provide insights into the mechanisms and dynamics that shape these relationships in different organizational and institutional settings.

2.3. Empirical Review

[6] - In their study "Corporate Governance and Performance in the Wake of the 2007-2008 Financial Crisis," the authors examined the impact of corporate governance mechanisms on firm performance during the financial crisis. They found that firms with stronger governance practices, such as independent boards and greater shareholder rights, exhibited better financial performance and resilience during the crisis. [19] - This study, titled "Corporate Governance, Regulatory Quality, and Bank Risk-Taking in MENA Countries," investigated the influence of corporate governance and regulatory quality on bank risk-taking in Middle Eastern and North African (MENA) countries. The findings revealed that better corporate governance practices, coupled with higher regulatory quality, led to reduced bank risk-taking and improved financial stability. [13] - In their study "Corporate Governance, Institutional Quality, and Innovation in European Firms," the authors examined the relationship between corporate governance, institutional

quality, and innovation performance of European firms. They found that firms with stronger governance structures and operating in countries with better institutional quality tended to exhibit higher levels of innovation. [1] - This study, titled "Board Diversity, Institutional Quality, and Bank Risk-Taking," explored the relationship between board diversity, institutional quality, and bank risk-taking behavior. The findings indicated that banks with more diverse boards and operating in countries with higher institutional quality demonstrated lower levels of risk-taking. [24] - In their study "Institutional Quality, Corporate Governance, and Firm-Level Risk," the authors examined the impact of institutional quality and corporate governance on firm-level risk in European firms. The results suggested that firms operating in countries with stronger institutions and adopting better governance practices tended to have lower levels of risk. These recent studies contribute to the growing body of literature on corporate governance, institutional quality, and firm performance. They provide valuable insights into the contemporary dynamics and the evolving nature of these relationships, shedding light on the importance of effective governance mechanisms and institutional quality in driving firm performance.

3. Research Methodology

3.1. Research Design

This study will adopt a quantitative research design, which involves the collection and analysis of numerical data to examine the relationships between corporate governance, institutional quality, and firm performance. The deductive research philosophy will be employed, where existing theories and concepts will guide the formulation of hypotheses and data analysis.

3.2. Sample Selection

We selected a sample of ten oil firms operating in Nigeria. The selection can be based on criteria such as company size, market share, and availability of financial data. We ensured that the selected firms represent a mix of different ownership structures (e.g., state-owned, publicly traded, privately owned) to capture a diverse range of corporate governance practices.

3.3. Data Collection

We collect secondary data from financial reports, annual statements, corporate governance reports, and other relevant sources. Obtain the financial performance indicators (e.g., profitability, return on assets) as well as data on corporate governance practices (e.g., board composition, CEO duality) and institutional quality indicators (e.g., regulatory effectiveness, legal framework) for each selected oil firm.

3.4. Data Analysis

The study employs a panel data analysis and a random effects model to investigate the relationship between

board structures, regulatory framework, and financial performance. The utilization of panel data analysis and a random effects model in this study represents a robust methodological approach for investigating the relationship between board structures, regulatory framework, and financial performance in the Nigerian oil & gas sector. This methodology allows for the examination of both cross-sectional and time-series variations in the data, providing a comprehensive analysis of the complex relationships under investigation. Panel data analysis is particularly suitable for studying dynamic processes over time, as it allows researchers to control for unobserved heterogeneity and capture individual and time-specific effects. By employing this approach, the study is able to account for the unique characteristics and dynamics of the Nigerian oil & gas sector, providing a more accurate understanding of the relationship between board structures, regulatory framework, and financial performance.

Additionally, the study adopts a random effects model, which accounts for both within-group and between-group variations in the data. This model acknowledges that there may be unobserved factors that affect the relationship under study, and by including random effects, it provides a more comprehensive analysis that captures both individual and group-specific variations. The choice of these research methodologies demonstrates the rigorous approach undertaken by the study to investigate the complex relationships in the Nigerian oil & gas sector. By employing panel data analysis and a random effects model, the study overcomes some of the limitations associated with cross-sectional studies and provides a more robust analysis of the factors influencing board structures, regulatory framework, and financial performance.

Table 2. Descriptive analysis of corporate governance practices and aspects of institutional equality within the Nigerian oil & gas companies

	REV	BI	BD	BO	GER	TR
Mean	7.926086	62.15979	17.94953	8.159055	3	3.3
Median	8.077	58.3333	18.75	2.20245	3	3.5
Maximum	8.7299	90	60	55.1934	3	3.5
Minimum	5.9133	36.8421	0	0.0171	3	3
Std. Dev.	0.683339	12.49605	10.67815	11.75347	0	0.246183
Skewness	-1.88471	0.708026	0.647271	2.010508	NA	-0.40825
Kurtosis	5.83973	2.61743	4.419786	6.734308	NA	1.166667
Jarque-Bera	92.80268	8.964844	15.38179	125.4735	NA	16.78241
Probability	0	0.011306	0.000457	0	NA	0.000227
Sum	792.6086	6215.979	1794.953	815.9055	300	330
Sum Sq. Dev.	46.22821	15458.98	11288.26	13676.27	0	6
Observations	100	100	100	100	100	100

in recent years (e.g., FORTE). The board ownership structure in the sector is generally concentrated, with BO scores ranging from 0.0171% to 55.1934%. Companies like MOBIL and CONOIL have a high concentration of ownership, while others have relatively lower concentrations. This concentration of ownership can impact decision-making processes and governance dynamics. The sector as a whole has a moderate gender equality rating, with a consistent GER score of 3 out of 5. This suggests that there is room for improvement in promoting gender equality and increasing female representation in leadership positions. The companies in the sector have a consistent trade rating of 3.5 out of 5, indicating a stable and positive trade performance. This

4. Data Analysis and Presentation

4.1. Presentation of Data

The study made use of secondary data which were obtained from the annual financial statement of the selected sampled companies of various years and from the Nigerian stock exchange covering the years from 2013 to 2022. The obtained data were then analyzed using both the descriptive and econometric methods. The descriptive study was analyzed using the summary of the statistics of the variables while the inferential method was done through the use of econometric procedures of the panel least square method with the aid of the use of EVIEW (11) software statistical tool.

4.2. Descriptive Analysis

These insights provide a glimpse into the corporate governance practices and aspects of institutional equality within the Nigerian oil & gas companies.

The companies in the sector generally have a moderate level of board independence, with BI scores ranging from 42.1053% to 88.2353%. While some companies consistently maintain a high level of board independence (e.g., JAPUL), others show some fluctuations over the years (e.g., ARDOVA). The level of board diversity in the sector is relatively low, with BD scores ranging from 0% to 37.5%. Most companies have a low representation of diverse board members. However, some companies have shown improvements

suggests that the sector has been able to maintain a satisfactory level of trade activities. Overall, the insights from the data indicate that while some companies in the Nigerian oil and gas sector demonstrate good corporate governance practices, there are areas for improvement, particularly in terms of board diversity and gender equality. Increasing board independence and promoting diversity can enhance decision-making processes and contribute to the overall effectiveness and transparency of corporate governance in the sector.

4.3. Econometric Analysis

The study is followed by an econometric analysis with emphasis on the panel least square method. In order to

achieve we start by estimating the Hausmann specification test. The Hausmann test then provide us direction to select between Random Effect Model or Fixed Effect Estimation method.

4.3.1. Hausmann Test

Null Hypothesis (H_0): The random effects model is appropriate for the panel data analysis.

Alternative Hypothesis (H_1): The fixed effects model is more appropriate than the random effects model for the panel data analysis.

The Correlated Random Effects - Hausmann Test was been conducted to determine whether there is a significant difference between the estimates obtained from a model with random effects and a model with fixed effects. The

test summary indicates that the Chi-Square statistic is 0.72445 with 4 degrees of freedom, and the corresponding p-value is 0.9483. Based on these results, we can infer that there is no significant evidence to reject the null hypothesis that the random effects are uncorrelated with the observed variables. The subsequent section provides comparisons between the fixed effects and random effects for different variables, such as BI, BD, BO, and TR. From the result, we can conclude that the Correlated Random Effects - Hausman Test does not indicate significant correlation between the random effects and the observed variables in the model. This suggests that using random effects estimation may be appropriate, as there is no strong evidence of correlation that would justify using fixed effects estimation instead.

Table 3. Hausmann Test

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		0.72445	4	0.9483
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
BI	-0.0002	-0.00022	0	0.8432
BD	0.000083	0.000112	0	0.8383
BO	-0.01282	-0.01305	0	0.7266
TR	-0.45055	-0.44976	0.00001	0.804
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.528348	0.252929	37.6721	0
BI	-0.0002	0.001706	-0.11641	0.9076
BD	8.29E-05	0.001853	0.044729	0.9644
BO	-0.01282	0.003739	-3.42874	0.0009
TR	-0.45055	0.05911	-7.62221	0

Source: Author's Computation

Table 4. Random Effects Panel Regression Result

Dependent Variable: REV				
Method: Panel EGLS (Cross-section random effects)				
Sample: 2013 2022				
Periods included: 10				
Cross-sections included: 10				
Total panel (balanced) observations: 100				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.528642	0.346455	27.50322	0
BI	-0.00022	0.001701	-0.13168	0.8955
BD	0.000112	0.001848	0.060522	0.9519
BO	-0.01305	0.003682	-3.54295	0.0006
TR	-0.44976	0.059024	-7.61993	0

4.3.2. Estimated Model:

$$REV = 9.53 - 0.00022 BI + 0.00011 BD - 0.013 BO - 0.45 TR + \epsilon$$

Where,

REV = Revenue of the oil & gas firms

BI = Board Independence

BD = Board Diversity

BO= Board Ownership Structure

TR = Trade Rating (Measure of Institutional Quality)

ϵ is error term over cross section and time;

The following results were obtained from the random effect panel estimation on the analysis of the relationship between corporate governance, institutional quality, and firm performance in the Nigerian oil & gas sector from 2013 to 2022:

The coefficients represent the estimated effects of the independent variables (BI, BD, BO, and TR) on the

dependent variable (REV). The constant term (C) has a coefficient of 9.528642, indicating that when all the independent variables are zero, the expected value of REV is approximately 9.53. The coefficient for BI is -0.000224, suggesting that a one-unit increase in Board Independence is associated with a slight decrease in the Revenue of oil firms, although it is not statistically significant. The coefficient for BD is 0.000112, indicating that a one-unit increase in Board Diversity is associated with a marginal increase in the Revenue of oil firms, but it is also not statistically significant. The coefficient for BO is -0.013046, implying that a one-unit increase in Board Ownership Structure is associated with a significant decrease in the Revenue of oil firms. The coefficient for TR is -0.449756, suggesting that a one-unit increase in Trade rating is associated with a substantial decrease in Revenue of oil firms in Nigeria. This coefficient is statistically significant, indicating a significant negative impact of TR on firm performance.

4.3.3. Policy Implications

The findings from the random effect panel estimation on the relationship between corporate governance, institutional quality, and firm performance in the Nigerian oil & gas sector have several policy implications: The coefficient for Board Independence (BI) suggests that increasing the independence of boards in oil firms may lead to a slight decrease in revenue. While this effect is not statistically significant in the current analysis, policymakers could consider strengthening corporate governance frameworks to ensure the independence and effectiveness of boards. This may involve implementing regulations and guidelines that promote transparency, accountability, and sound decision-making processes within oil firms. The coefficient of BD further indicates that, in the context of the Nigerian oil & gas sector, board diversity alone may not be a significant factor influencing firm performance or revenue generation for oil firms. Other factors such as market conditions, operational efficiency, regulatory environment, and management decisions might have a more substantial impact on firm performance in this sector. The coefficient for Board Ownership Structure (BO) indicates that an increase in board ownership is associated with a significant decrease in revenue. This finding suggests that policymakers should pay attention to the ownership structure of oil firms and ensure a balance between ownership concentration and firm performance. Measures can be taken to prevent excessive concentration of ownership, promote diversity in ownership, and discourage conflicts of interest that may arise from high board ownership. The coefficient for Trade Rating (TR) indicates a substantial negative impact on firm performance. This finding highlights the importance of a favorable trade environment for oil firms in Nigeria. Policymakers should focus on improving trade policies, reducing trade barriers, and creating an enabling environment for international trade. Efforts can be made to strengthen trade relationships, negotiate favorable trade agreements, and provide support for export-oriented activities in the oil & gas sector.

4.4. Discussion of Findings

The findings from the analysis of the relationship between board structures, regulatory framework, and financial performance in the Nigerian oil & gas sector from 2013 to 2022 need to be discussed in comparison with the existing literature on the topic. Regarding board structures, the coefficients for Board Independence (BI) and Board Ownership Structure (BO) indicate that these variables have different effects on financial performance. While the coefficient for BI suggests a slight decrease in revenue, it is not statistically significant. On the other hand, the coefficient for BO indicates a significant decrease in revenue, implying that a higher board ownership structure negatively impacts financial performance. These findings align with previous research that highlights the importance of board composition and ownership structure in influencing firm performance [3,15,17]. In terms of the institutional framework, it is important to consider the broader regulatory environment in which these relationships operate. Strong legal and regulatory protections, including effective shareholder rights and enforcement mechanisms, have been associated with better financial performance [1], meanwhile, in the Nigerian context, the coefficient for Trade Rating (TR) suggests a substantial negative impact on oil firms' performance. This finding highlights the importance of trade policies and the trade environment for the performance of oil firms in Nigeria. Efforts should be made to improve trade policies, reduce trade barriers, and create an enabling environment for international trade in the oil & gas sector. By enhancing the trade environment, policymakers can support the growth and performance of oil firms in Nigeria.

5. Summary, Conclusion and Recommendations

5.1. Summary of the Findings

The summary of the findings reveals important insights into the relationship between corporate governance, institutional quality, and firm performance in the Nigerian oil & gas sector from 2013 to 2022 is discussed: The study did not find a statistically significant relationship between board independence and firm performance. This implies that changes in the level of board independence, such as increasing the number of independent directors or strengthening their role, did not have a significant impact on the revenue of oil firms in Nigeria. This finding suggests that other factors beyond board independence may play a more significant role in determining firm performance in the Nigerian oil & gas sector. The implication of finding that which showed that the coefficient for (BD) is positive but insignificant can be attributed to the fact that Board Diversity is a necessary but not a sufficient condition for increasing the revenue of oil firms in Nigeria. This finding suggests that while board diversity is often considered a crucial aspect of good governance, it should not be viewed in isolation. Instead,

it should be examined in conjunction with other governance mechanisms and factors that affect firm performance. This includes considering the effectiveness of board structures, executive compensation, risk management practices, and transparency and accountability measures.

The research revealed a significant negative relationship between board ownership structure and firm performance. Higher levels of board ownership concentration were associated with a decrease in revenue for oil firms operating in Nigeria. This finding implies that when a small group of individuals or entities holds a significant portion of the company's shares, it can have a detrimental effect on firm performance. This could be due to agency problems or the entrenchment of the controlling shareholders, which may limit the firm's ability to make optimal decisions and achieve sustainable growth. The study found a significant negative impact of trade ratings on firm performance. An increase in trade rating was associated with a substantial decrease in the revenue of oil firms in Nigeria. This suggests that firms operating in the Nigerian oil & gas sector with lower trade ratings experienced challenges in generating revenue. Trade ratings could reflect market conditions, global demand for oil, or other external factors that negatively affect the revenue of oil firms. It highlights the importance of considering the external economic environment and market conditions when evaluating firm performance in the oil & gas sector.

5.2. Conclusions

In conclusion, this study aimed to examine the relationship between corporate governance, institutional quality, and firm performance in the Nigerian oil & gas sector from 2013 to 2022. The theoretical framework of the study drew upon multiple theories, including Agency Theory, Stakeholder Theory, Institutional Theory, Resource Dependence Theory, and Transaction Cost Economics, to provide a comprehensive understanding of the topic. To analyse the data and test the relationships, the study utilized the econometric technique of Panel Least Square (PLS) method. This method allowed for the examination of both cross-sectional and time-series variations in the data, enabling a robust analysis of the relationship between the variables of interest. The findings of the study provided valuable insights into the specific context of the Nigerian oil & gas sector. The results indicated that board independence did not have a statistically significant impact on firm performance, suggesting that other factors may play a more influential role in determining performance outcomes in the sector. The finding suggests that increasing board diversity alone may have a limited impact on the revenue and overall performance of oil firms in the Nigerian oil & gas sector. Furthermore, the study revealed a significant negative relationship between board ownership structure and firm performance. Higher levels of board ownership concentration were associated with a decrease in revenue for oil firms operating in Nigeria. This finding highlights the potential challenges and risks associated with concentrated ownership in the sector. Additionally, the study found a significant negative impact of trade ratings on firm performance. Lower trade ratings were associated

with a substantial decrease in revenue for oil firms, underscoring the importance of considering external market conditions and economic factors when evaluating firm performance in the oil & gas sector.

These findings contribute to the existing literature on corporate governance, institutional quality, and firm performance, specifically in the Nigerian oil & gas sector. The study offers insights that can inform practitioners, policymakers, and industry stakeholders in designing effective governance mechanisms and strategies to enhance firm performance and mitigate risks.

5.3. Recommendations

Based on the findings from the analysis of the relationship between board structures, regulatory framework, and financial performance in the Nigerian oil & gas sector from 2013 to 2022, the following recommendations can be made:

- i.) Although the coefficient for Board Independence (BI) did not show a statistically significant effect on financial performance, it is still important to promote board independence in the Nigerian oil & gas sector. Encouraging the appointment of independent directors and ensuring their active participation in decision-making processes can contribute to better governance practices and potentially improve financial performance.
- ii.) While the study found limited impact of board diversity on firm performance, it is essential to recognize that diversity encompasses various dimensions beyond gender or ethnicity, such as expertise, experience, and perspectives. Therefore, organizations should broaden their understanding of diversity and consider these additional dimensions when forming their boards. This can enhance the board's ability to address complex challenges and make informed decisions.
- iii.) The coefficient for Board Ownership Structure (BO) indicated a significant negative impact on financial performance. It is crucial to assess and address the ownership structure in oil firms to mitigate the potential entrenchment and agency problems associated with concentrated ownership. Implementing policies that encourage diversified ownership and limit excessive concentration can promote transparency, accountability, and better financial performance.
- iv.) Given the significant influence of the regulatory environment on financial performance, policymakers should focus on strengthening the regulatory framework in the Nigerian oil & gas sector. This includes developing and enforcing robust corporate governance regulations that promote transparency, accountability, and protection of minority shareholders' rights. Efforts should also be made to improve the legal and enforcement mechanisms that support the regulatory framework.
- v.) Also, policymakers should work towards improving trade policies and reducing trade barriers in the oil & gas sector. By creating an enabling environment for international trade, such as streamlining customs

procedures and reducing bureaucratic hurdles, oil firms can enhance their competitiveness and potentially improve financial performance.

- vi.) Given the complexity of the relationship between board structures, regulatory framework, and financial performance, collaboration among industry stakeholders is crucial. Oil firms, regulators, policymakers, and industry associations should work together to share best practices, identify common challenges, and develop sector-specific governance guidelines and regulatory frameworks that can enhance financial performance.
- vii.) It is essential to establish monitoring and evaluation mechanisms to assess the effectiveness of governance practices, regulatory reforms, and trade policies in the Nigerian oil & gas sector. Regular evaluations can help identify gaps, measure the impact of interventions, and inform necessary adjustments to enhance financial performance.

5.4. Contributions to Knowledge

The study contributes to a contextual understanding of the interplay between board structures, regulatory framework, and financial performance in the Nigerian oil & gas sector. It recognizes the importance of considering industry-specific characteristics, institutional environments, and cultural norms when examining the relationship. By focusing on a specific sector within a particular country, the study provides insights that are relevant to policymakers, regulators, and industry practitioners operating in similar contexts.

5.5. Further Research and Contextual Analysis

It is important to note that the current findings are based on the specific analysis conducted using panel data from 2013 to 2022. Policymakers should consider conducting further research and analysis to validate these findings and explore the specific contextual factors that may influence the relationship between corporate governance, institutional quality, and firm performance in the Nigerian oil & gas sector. This can involve studying industry-specific dynamics, policy interventions, and economic conditions to gain a comprehensive understanding of the factors that drive firm performance in the sector. Overall, the policy implications suggest the need for attention to corporate governance practices, ownership structure, and trade policies to foster a conducive environment for the sustainable growth and performance of oil firms in Nigeria.

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