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Moderating effect of firm attributes on sustainability reporting quality of listed oil and gas companies in Nigeria

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Abstract
The study examined moderating effect of firm attributes on sustainability reporting quality of oil and gas companies in Nigeria. Five dimensions of the firm attributes were considered, namely; firm size, firm age, firm leverage, firm liquidity and board side. The methodology adopted was ex post facto and content analysis. From a total population a sample of 20 top oil and gas companies were drawn using purposive sampling technique. Data was collected from secondary sources, mainly from annual reports and accounts of the selected oil and gas companies listed on the Nigerian Exchange Group as at 2023. The study employed regression analysis to ascertain the direction and magnitude of the association. The findings revealed that firm size, firm leverage, firm liquidity and board size have positive and significant relationship with sustainability reporting quality while firm age has negative effect on sustainability reporting quality. The study concludes that firm size, firm leverage, firm liquidity and board size are significant determinants of sustainability reporting quality in oil and gas companies. The study recommended a better environmental legislation and enforcement in addition to a unified framework and standard for sustainability reporting. Therefore, firm attributes with positive outcomes used in this study should be profoundly invested upon and the regulating agencies of government in view of the role they played in ensuring that companies act responsibly towards social, economic and environment by making sustainability reporting quality.

Keywords: Firm age, Firm attributes, Firm leverage, Firm liquidity, Sustainability reporting

1. Introduction

Global recognition has been accorded to sustainability reporting as a way to address present problems and guarantee that future generations will be able to satisfy their own demands. Consequently, companies are now required to show their dedication to these initiatives by adopting corporate sustainability reporting, or the triple bottom line a term that integrates environmental, social, and economic considerations. Unfavourable changes in the global climate have been linked to high levels of industrialization and market sophistication. A lot of companies, both public and private, have embraced the release of sustainability reports and disclosures as a way to show accountability in response to the problem of fast climate change and control the effects of their operations on the community, economy, and environment in order to acquire a competitive edge, draw in clients and other stakeholders, and portray themselves as ethical companies, (Choudhuri & Chakraborty, 2009). The United Nations Assembly on Climate Change, in partnership with nongovernmental organisations, issued regulations and guidelines for reporting sustainability actions and released the influential report, which served as the motivation for the study. Corporate sustainability reporting has become increasingly popular over time, particularly in industrialised nations (KPMG International, 2013). As a result,

countries are expected to establish sustainability guidelines, standards, and frameworks by designing, implementing, encouraging, and mandating Environmental, Social, and Governance (ESG) initiatives. Complete and transparent reports have the potential to hold companies accountable for their environmental degradation and progress towards sustainable development (Babangida, 2023). As people become more aware of sustainability issues, stakeholders, including investors and consumers, are requesting greater transparency from companies.

The presence of various interrelated elements, such as biophysical, institutional, and economic issues, is fuelling the continuation of unsustainable practices (Lee, 2020; Liu et al., 2021). The interrelationship among these components can be effectively demonstrated by examining the circumstances in Nigeria, where historically there has been the depletion of resources, the destruction of biodiversity and the ozone layer, global warming, deforestation, drought, the extinction of aquatic and terrestrial animals, economic inequality, and numerous social issues (Gallego-Álvarez, Segura & Martínez-Ferrero, 2015). These challenges have been witnessed in Nigeria, where nearly 60% of the land area is degraded and about 75% of the landmass is prone to desertification (Babangida, 2023). The prior researches (Babangida, 2019; Abdullahi & Auwal, 2021; Ibrahim, 2023) primarily focused on discussing the phenomenon of meaning and disclosure, neglecting to look at the factors that influence sustainability implementation and disclosure as well as its financial and economic ramifications. Throughout the course of exploration, production, and marketing, oil and gas corporations engage in a number of interactions with local populations. Demands to make investments in the local communities' development have been made of oil and gas firms as a result. Furthermore, in recent years, the World Bank, the government, and non-governmental organisations have all asserted the benefits that sustainability reporting can bring to the fight against poverty and the advancement of local communities. Local communities benefit from the work of socially sustainable organisations. Maintaining citizens' political and economic rights is essential to social sustainability. Nigeria found oil at Oloibiri in the Niger Delta in 1956. This finding created the groundwork for the nation's continued existence. When it comes to the subject of what makes the biggest contribution to the Nigerian economy, the oil and gas industry is very much in the spotlight. Oil and gas firms are more focused on operating in a contemporary manner that is acknowledged as progress that meets the needs of the current generation without jeopardising those of future generations. Oil and gas companies can work towards achieving these goals by incorporating environmental, social, and economic responsibilities into their mission statement.

Quality sustainability reporting conveys organisational strategies and company's performance to a wide range of stakeholders by integrating pertinent financial and non-financial data. In Nigeria, managing stakeholder expectations and interacting with local populations are frequent hurdles for oil and gas companies. Firm attributes include things like structure, size, liquidity, leverage, management styles, and other aspects of the organisation that affect the decisions the organisation makes to achieve its performance goals and objectives. Previous research states that firm size, firm age, and leverage can give effect to the profitability and going concern of a company, (Kartikasari and Merianti, 2016). Studies found that the leverage had significant and positive effect to the profitability, firm size proxied by natural

logarithm total assets had significant and negative effect to the profitability, while firm size proxied by natural logarithm total sales had no significant effect to the profitability of companies. Thus, the researcher examines the moderating effect of firm attributes proxied by firm size, firm age, firm leverage and firm liquidity on sustainability reporting quality of oil and gas companies in Nigeria which spans five years from 2019 to 2023, is contingent upon the availability of data. The following questions are addressed in this paper: In what ways does firm size affect the quality of sustainability reports among Nigerian oil and gas companies? What effect does firm age have on the level of sustainability reporting in Nigerian oil and gas companies? How much does firm leverage affect the quality of sustainability reporting? How much does firm liquidity moderate sustainability reporting quality of oil and gas companies in Nigeria. The remaining sections of the study are literature review where conceptual framework, theoretical framework, and empirical studies were reviewed. The methodology of the study, discussion of the results, conclusion and recommendations.

2. Literature Review

2.1 Conceptual Review

2.1.1 Sustainability Reporting (SR). A sustainability reporting is a document released by a business or organisation that details the social, environmental, and economic effects of its regular operations, according to the Global Reporting Initiative (2011). A sustainability report illustrates the connection between an organization's strategy and its dedication to a sustainable global economy, as well as presenting the organization's values and governance model. In addition to being helpful to stakeholders, sustainability reporting is a methodical way to compile and present the sustainability data required for the management process. In layman's terms, sustainability reporting, also known as triple bottom-line reporting, is a method of assessing and revealing an organization's performance in order to meet social, economic, and environmental parameters. However, when viewed from a broader angle, it encompasses all of the values, issues, and procedures that organisations must take care of in order to reduce the negative effects of their operations and, as a result, improve social, economic, and environmental values. The three lines stand for society, the economy, and the environment. According to research, the term "sustainable" is actually a translation of the term "sustainable development," which means continuity or perpetuity. The Arabic verb "perpetuate" has multiple meanings in the language, such as "slowness in something, requesting permanence and perseverance in it" (Al-Jajjawi & Al-Khafaji, 2020).

The Brundtland report, which was presented at the Rio de Janeiro UN conference in favour of Agenda 21, brought the idea of sustainable development—a United Nations initiative—to international attention in 1987. Less than five years had passed by when 178 nations ratified the comprehensive action plan known as Agenda 21 (UN Conference on Environment and Development, 1992). The pursuit of sustainability reporting emerged from societal apprehension regarding the sustainability of the human-economic system, given that the planetary ecosystem's biophysical carrying capacity is greatly endangered by the population's exponential growth rate (American Accounting Association). Corporate social responsibility and sustainability reporting are terms that are sometimes used interchangeably. However, research indicates that while sustainability reporting offers emerging economies limitless opportunities for success, corporate social responsibility is employed by businesses in the developed world to protect their brand. The process of choosing the firm-level

social performance variables, measures, and measurement procedures is known as sustainability reporting. It also entails methodically creating information that is helpful for assessing the firm's social performance and disseminating that information to relevant social groups both inside and outside the organisation (Dibia & Onwuchekwu, 2015).

According to Choudhuri and Chakraborty (2009), sustainability reporting (SR) is a framework for reporting that emphasises three important aspects: "the economic, social, and environmental performance" of a firm, in addition to its financial well-being. The Global Reporting Initiative (GRI), a reputable organisation in the sustainability field, defines SR as an involvement in evaluating, disclosing, and being answerable to the stakeholders, both internal and external, for the overall well-being. Sustainability reporting is concerned with measuring, accounting for, and disclosing an organization's economic, environmental, and social performance in order to improve sustainability development and boost the firm's overall performance (ACCA 2005). The most well-known framework for accounting for corporate sustainability is probably the triple bottom line (TBL) concept, which was introduced by Elkington (1998). It states that analysing the social, economic, and environmental issues that are important to stakeholders must be one of the dimensions by which it is measured. Nonetheless, businesses have a great deal of discretion in deciding whether and how to account for the TBL costs and benefits connected to their operations due to the voluntary and unregulated nature of sustainability reporting. A tool for reporting and informing stakeholders from an accounting standpoint, sustainability reporting is sometimes included in annual reports and other independent publications.

2.1.2. Firm Attributes. The term firm attributes are associated with a variety of terminologies and its meaning and context differ across the industrial sector. Firm structure, market, and capital structures are intricately linked to form firm Attributes. The most common features of structural firm attributes are firm size, firm age, and firm leverage. Similarly, market-related variables take account of the industry type, environmental uncertainty, and market environment. As noted by Mgni and Nayak (2016), practitioners and academics cannot agree on the definition and substance of firm attributes. which impact sustainability implementation and disclosure, include firm size, age, leverage, and sales growth. These factors may have a moderating effect on the decision of oil and gas companies regarding whether or not to engage in sustainability reporting (Akbas, 2019). Today, an organization's ability to survive depends on how well it integrates sustainability issues into its business strategy and doing so will help oil and gas companies reduce waste, emissions, energy use, and conservation

2.1.3. Firm Age (FAGE). This refers to the age of a company at the time of analysis. In this study, the researcher measured the firm age from the difference between the year the study was conducted and the year the company was established. Maintaining the existence of a business for a long time period is hard because the company must maintain the quality of products and there will always be new unit. Businesses enter the market with their products, therefore in order to stay in business and compete with rivals, they must use cutting-edge items and technology. A company's founding date can be used to calculate its firm age (Paramitha & Rohman, 2020).

2.1.4. Firm Size (FSIZ). It can be determined by taking two measures: the natural logarithm of its total assets or the natural logarithm of its total sales. In this research study, the natural logarithm of its total assets was used because the total assets are all resources that the company owns as a result of past transactions and it

was anticipated that these resources would provide potential future economic benefits for the company. The larger a company is, the more activities it will carry out in its business activities that will get more revenue. According to Aulia and Agustina (2015), explained that firm size is a scale that indicates a company classified as large or small. The greater the size of a company, the more activities carried out in its business activities that will get more attention from external parties such as government, investor, creditors and economic analyst rather than small company. Obeitoh, Ridzwana and Zaidi, (2017), examine the determining factors and level of corporate sustainability disclosure on employees in Malaysia. The study covers a six-year period of 2010 to 2015 of 253 companies in Malaysia. The study employed two-step system generalized method of moment (GMM) for analysis. The results show shows company size is a determinant of corporate sustainability.

2.1.5. Firm Liquidity (FLIQ). This is the firm's ability to fulfil its short-term obligations as they come due (Gitman, 2015:119). Liquidity ratio is one of financial ratio that often used to analyse the financial statements of company and it refers to the solvency of firm's overall financial position with the ability to pay its bills and it can provide sign problem of cash flow or failure business. According to Gitman (2015), current ratio is the company's ability to pay its short-term obligations using its current assets and it can be measured by Current Ratio which is equal to current assets divided by current liabilities. High level of liquidity of a company will open the opportunity to get support from third parties because it shows the company has enough liquidity to operating activities. The company must maintain liquidity to maintain business continuity and relationships with external parties such as suppliers, investors, creditors, securities institutions, and government.

2.1.6. Firm Leverage (FLEV). Running a business may not always face a good financial situation, therefore the company needs sources of funds from outside the company to help the operating activities and maintain the continuity of its business. Meeting the needs of funds originating from outside the company can be obtained from borrowing funds to creditors such as banks or non-bank financial institutions and investors by issue shares or bonds to be offered to the public. Higher debt ratio shows the higher level of indebtedness and more financial leverage it has because of the greater amount of other people's money used to generate profits. According to Gitman (2015), explained that debt ratio measures the proportion of firm's total assets financed by creditors and it can be measured by debt ratio which is equal to total liabilities divided by total assets. Fulfilment of funding sources from debt will affect the level of leverage ratio of company, because it shows how much of assets that company funding from external parties. Company with high leverage ratio indicate to not good financial condition because the company running its operating activities mostly debt funded. Kilic and Kuzey (2017) investigate the sustainability reporting practices of Turkish non-financial companies listed on Borsa Istanbul (BIST) from 2004 to 2015. It revealed that listing on the Corporate Governance Index (CGI), having a sustainability committee, leverage is not a significant factor affecting sustainability disclosures.

2.1.7. Board Size (BSIZ). Board size refers to the number of directors on a company's board of directors. The ideal board size can vary depending on the company's size, complexity, and industry, but generally, a smaller board is considered more effective. According to Ghabayen, Mohamad, and Ahmad (2016), board size has an effect on the monitoring, decision-

making, and disclosure processes of businesses. They went on to say that a larger board may improve the company's transparency by influencing how environmental data is disclosed and by include the shareholders' group in board deliberations. According to Masud, Nurunnabi, and Bae, (2018), a board can reduce managerial risk and opportunism and promote proactive management action with respect to social and environmental issues by giving more information. They continued by saying that individuals on large boards are likely to have greater expertise and be able to handle a wider variety of significant issues, such as interactions with many stakeholders, such as activists and regulators, and problems like pollution, biodiversity, and media exposure. Ultimately, the optimal board size depends on the company's specific needs and circumstances.

2.2 Empirical Review

The effects of sustainability accounting which has three dimensions: environmental, economic, and social on the calibre of financial reports of pharmaceutical and chemical companies listed on the ASE were studied by Abedalrazzak, Ghaleb, and Abdel, 2024). Using simple and complex regression models, the results show that the environmental, economic, and social aspects of sustainability accounting activities influence the financial reports' quality either entirely or in part. The statistical analysis's findings also demonstrate that a rise in the reporting of sustainability attributes raises the quality of the financial reports produced by the companies that are the subject of the study. Ahmad, Afnan, Yasmeen, & Abd, (2024), examined the role of applying green innovation in enhancing environmental sustainability in industrial facilities in Palestine. The study has found that the overall degree of applying green innovation as well as the overall degree of environmental sustainability in industrial facilities in Palestine was high. It showed a significant relation between areas of green innovation combined and enhancing environmental sustainability in these facilities. However, there were some differences in the evaluation of sample study individuals in the areas of green innovation and environmental sustainability according to the sector variable. Dincer, Banu, and Caner Dincer (2024). the study examined a thorough synthesis of the qualitative SR literature covering sustainability reporting (SR) topics. It aims to shed light on the qualitative approaches employed as well as the theoretical and conceptual underpinnings that have shaped the development of the sustainability area. While institutional theory and stakeholder theory have dominated the chosen literature, there is still much to learn about the investigation of moral legitimacy. Because of the complexity and diversity that come with using qualitative research methodologies, it is important to emphasise that this evaluation only includes qualitative studies.

Ndubuisi, Akoh, Benjamin, Chinedu, Onyeka, and Rhoda, (2024), Within the context of sustainable accounting, the study offers a thorough analysis of how environmental expenses are included into financial reporting. The results demonstrated how environmental accounting has changed significantly over time, moving from a fringe practice to a mainstream element of financial reporting. Contemporary methodologies are distinguished by inventive strategies and technology breakthroughs, signifying a transition towards comprehensive and eco-friendly corporate operations. The research pinpointed several obstacles, including the intricacy of amalgamating ecological expenses, the necessity for uniform reporting structures, and the demand for proficient proficiency.

Islam, Uddin, and Hossain, (2024) examine how environmental reporting affects the

performance of the Bangladeshi listed firms on the Dhaka Stock Exchange (DSE). The results of the multiple regression analysis indicate that environmental disclosers have a positive and significant impact on market performance as measured by the market performance tool, Tobin's Q (TQ). On the other hand, the findings also suggest that environmental disclosures have little bearing on the financial performance of the firms as measured by return on equity (ROE) and earnings per share (EPS).

Shahd, and Yasir, (2023) looked at the evolution of sustainability accounting standards historically. Since the excessive and misuse of these non-renewable resources harms older generations, the desired goal of sustainability concepts is to provide a balance in all economic, social, and environmental fields. Being aware of these risks does not absolve one of responsibility, however; one must work seriously to find solutions and correct the path towards the best in achieving an environment sustainable economy and its continuous development to contribute to the preservation of our planet and the achievement of social well-being.

Iliemena, Amedu, and Uagbale-Ekatah, (2023), examined sustainability reporting, return on capital employed, and gross profit margin empirically. The results of the regression analysis indicated that social disclosure had a significant positive impact on GPM, but no significant impact of environmental disclosure was observed on ROCE, which could have been caused by other factors outside the purview of the study. The development of new reporting tools will be aided by the need to standardise sustainability information. As demonstrated by the Global Reporting Initiative, many companies began implementing Sustainable Enterprise Resource Planning (S-ERP) to digitalize their processes (Global Reporting Initiative, 2022).

Sustainability performance measurement is within the broad umbrella of social accounting. Different types of activities, such as social, environmental, and economic ones, can be categorised under this domain, (Akbas, 2019). That is to say, among other things, corporate social responsibility, corporate governance, and human resource planning produce the broad ideas and disclosure of sustainable performance. The process of determining the firm-level social performance variables, measures, and measurement procedures is known as sustainability reporting. It involves methodically creating information that is helpful for assessing the firm's social performance and disseminating that information to relevant social groups both inside and outside the organisation (Babangida, 2023). A new trend in corporate reporting is sustainability reporting, which combines a company's financial and non-financial performance into a single report. Many businesses currently choose to include social and environmental issues in their strategy plans on a voluntary basis. In a few select nations, including South Africa, Germany, France, and Finland, sustainability reporting may be required by law. Additionally, it may be voluntary and motivated by initiatives for market differentiation or mild internal and external pressures (Joshi & Li, 2016).

2.3 Theoretical Framework

2.3.1. Contingency Theory. The theory could be traced as far back as 1964 and was credited to the work of Australian Psychologist Fred Edward Fielder who in his work linked the effectiveness of a leader to the personality of the leader and the situation in which the leader operates. A firm could as a result of its quest towards creating a good name and achieving social acceptance which will in turn, generate a more competitive advantage and result in the creation of a smooth operating environment aside from winning the interest of investors who are so keen about

sustaining the environmental embrace contingency approach to Environmental Disclosure. Contingency theory suggests that the effectiveness of sustainability reporting depends on various contextual factors, such as: Organizational size and complexity; industry and regulatory environment; stakeholder expectations and pressure; organizational culture and values; resource availability and capacity. According to contingency theory, companies should adapt their sustainability reporting approach to fit their specific context. For instance: Large companies in heavily regulated industries may require more comprehensive and formalized sustainability reporting. Small companies in low-regulation industries may focus on simpler, more informal reporting. Companies with strong environmental track records may emphasize climate change and sustainability performance. Companies in controversial industries (e.g., fossil fuels) may prioritize transparency and accountability.

2.3.2. The Legitimacy Theory. The theory could be traced to Dowling and Pfeffer (1975) It rests on the concept of Social contract with the assumption that social contract exists between corporations and individual member of the society and in order to bridge the legitimacy gap between the firm and the environment in which its operation is carried out, it is pertinent that various disclosure strategy need to be considered. A legitimate theory contends that companies should respond by increasing their legitimacy and value by providing customers with what they want, but not by coercing them. Legitimacy theory explains a company's battle to conduct its operations and activities in a way that does not negatively affect the community in which it operates, (Atanda, Osemene & Ogundana, 2021). Companies must uphold social norms and values, think about how their activities will benefit society as a whole, minimise any bad impacts, and take responsibility for any harm they may have caused in order to be considered legitimate, (Jamang, Joseph, & Said, 2020).

2.3.3. Stakeholder Theory. This theory states that managers react to pressures put forth by owner-stakeholders because of legitimacy, power, and urgency considerations. Freeman (1984) suggests that the firm stakeholders influence the top managers who are in charge of strategy development and implementation through resource usage and withholding mechanisms. The theory provides rich insights into the factors that motivate oil companies concerning the disclosure of sustainability performance. Preference is given to stakeholders based on the resources they command, the power to enact and impose laws, regulation and influence over the media or consumers (Amran & Haniffa, 2011). Furthermore, Nasiru, et al. (2020), contend that stakeholder theory attempts to address the group of stakeholders deserving and requiring management's attention. According to Ofoegbu et al. (2018), stakeholder theory entails recognising and identifying the connection between a corporation's engagements and how they affect its participants. According to the stakeholder's hypothesis, agents are accountable to the shareholders, but companies are accountable to the stakeholders.

This study was supported by the contingency theory, legitimacy theory, and stakeholder's theory which describes the company's readiness to act freely and consider the society in which it works. Contingency theory highlights that there is no one-size-fits-all approach to sustainability reporting. Companies should consider their unique context and adapt their reporting strategy accordingly. The theory best explains the study of firm attributes, which is concerned with the company's decision-making, and sustainability reporting, which is generating a lot of discussion and conflict

over the environment's safety and is likewise of a voluntary nature. By recognizing the contingency theory perspective, companies can develop sustainability reporting practices that are tailored to their specific situation, enhancing the effectiveness and credibility of their reporting.

3. Methodology

The study employs the ex-post causal research design. The population of the study are the listed oil and gas companies in Nigerian Exchange Group. The purposive sampling was used based on assets worth. The sample consist of twenty top oil and gas companies selected listed on the Nigerian Exchange Group. These companies are selected because they could be regarded as environmentally sensitive companies. The study employs secondary data retrieved from corporate annual reports of the environmentally sensitive companies quoted from 2018 to 2023. For the estimation of the data, the Generalized Least Squares was utilized for the estimation. The study used multiple linear regressions to determine the effect of changes in the independent variables on dependent variable. To assess the sustainability reporting quality, this study adopted the Global Reporting Index (GRI) based on the valuation of the sustainability report according to guide G4 because of its universal acceptability and ease of classification of the companies. Bounded response variables (variables assuming values between 0 and 1) present peculiar distributional properties; as a result, in most cases such variables are amenable to linear regression models. In this study, prior to the multiple linear regression, the following diagnostics were conducted such as the descriptive statistics, normality test, multicollinearity test, correlation test, heteroskedasticity test, and variances inflation factor test.

Table 1
Study Variables Measurement

Dependent Variable	**Symbol**	**Measurements**
Sustainability Reporting Quality	SURQ	Sustainability index using the Total Global Reporting Initiative score for each company
Independent Variables		
Firm Age	FAGE	Difference between the year the study was conducted and the year the company was established.
Firm Size	FIZE	Natural log of total assets
Firm Leverage	FLEV	The ratio of total liabilities to total assets
Firm Liquidity	FLIQ	Current assets divided by Current liabilities.
Board Size	BSIZ	Total number of directors. (Bako, 2018)

Source: Compiled by the Researcher

Model Specification

The model for the study examines the moderating effect of firm attributes on sustainability reporting quality of oil and gas companies in Nigeria. The model adapts those of Obeitoh, Ridzwana and Zaidi, (2017), modifying the choice of firm attributes to be used.

The research regression models were formulated as follows:

$SURQ = f(Firm\ Attributes)$ ……(1)

$SURQ = f(FAGE, FSIZ, FLEV, FLIQ\ \&\ BSIZ)$ …… ……(2)

Expressing in econometric model below:

$$SURQ_{it} = \beta o + \beta_1 FAGE_{it} + \beta_2 FIZE_{it} + \beta_3 FLEV_{it} + \beta_4 FLIQ_{it} + \beta_5 BSIZ_{it} + \varepsilon_{it} \quad \text{.....(3)}$$

Where:

SURQ = Sustainability Reporting Quality
FAGE = Firm Age
FIZE = Firm Size
FLEV = Firm Leverage
FLIQ = Firm Liquidity
BSIZ = Board Size
βo = constant
β_1 to β_5 = the parameters or coefficient of the model
i = represent number of firms
t = represent the time frame of the panel data
ε = error term

4. Results and Discussion

This section presents and discussed the descriptive statistics, the regression together with the various test and results of the regression analysis.

Table 2.
Descriptive Statistics

STATS	SURQ	FAGE	FIZE	FLEV	FLIQ	BSIZ
Mean	1.43	2.60	2.45	6.18	8.45	6.95
Median	3.46	5.25	4.13	8.81	2.44	7.93
Maximum	5.46	9.09	9.43	9.47	9.13	3.92
Minimum	2.89	7.63	8.21	8.53	5.05	2.33
Std. Dev.	8.78	8.48	3.28	3.37	1.21	6.76
Skewness	0.34	0.78	1.33	2.01	1.01	0.32
Kurtosis	2.13	0.52	1.50	0.42	1.22	3.01
Observations	100	100	100	100	100	100

Source: STATA 14 Output (2024)

Table 2 above shows the descriptive statistics of the variables used in the research. Sustainability reporting quality (SURQ) show a mean value of 1.43 with median value of 3.46, maximum value of 5.46 while minimum 2.89, and standard deviation of 8.78. This revealed that the study variables are not too far from each other. Firm age (FAGE) with mean value of 2.60, median value of 5.25. maximum value of 9.09, minimum value of 7.63 and standard deviation of 7.63. This show age representation of the firms of the study. Firm size (FIZE) show a mean value of 2.45, median value of 4.13, maximum value of 9.43, minimum value of 8.21 and a standard deviation value of 3.28. This show that the sizes of assets of the firms under study are moderately comparable. Firm leverage (FLEV), revealed a mean value of 6.18, with median value of 8.81, maximum value of 9.47, minimum value of 8.53 while standard deviation value of 3.37. This means the firms under study are moderated financial leverage.

Firm liquidity (FLIQ) shows a mean value of 8.45, with median value of 2.44, maximum value of 9.13, with minimum value of 5.05 while the standard deviation value of 1.22. This revealed that firm's liquidity under study were moderated. Board size (BSIZ) revealed a mean value of 6.95, with median value of 7.93, a maximum value of 3.92, minimum value of 2.33 and standard deviation of 6.76. The descriptive statistics of board size of the firms under the study show a moderated number of directors. The rule state that, a skewness value = 0 (normal) >0 (positive skewness) and <0 (negative skewness). The results above show that the probability skewness value and probability kurtosis of the study variables are greater than 0 which means they are normal that is positively Skewness and Kurtosis.

Table 3.
Pearson Correlation Matrix

Variables	SRQ	FAGE	FIZE	FLEV	FLIQ	BSIZ
SURQ	1.0000					
FAGE	-0.1655	1.0000				
FIZE	0.4875	0.3381	1.0000			
FLEV	0.7963	0.3340	0.8771	1.0000		
FLIQ	0.1455	0.0353	0.3837	0.2866	1.0000	
BSIZ	-0.0330	0.0070	0.2975	0.1295	0.8453	1.0000

Source: STATA 14 Output (2024)

Table 3 shows the Pearson correlation matrix of the study variables. Sustainability reporting has positive correlations with firm size (r=0.4875), firm leverage (r = 0.7963), and firm liquidity(r=0.1455), but negative relationship with firm age (r = -0.1655), and board size (r = -0.0330) respectively. Firm age has positively correlated with firm size, firm leverage, firm liquidity, and board size but negatively correlated with sustainability reporting quality. Firm size positively correlated with all the study variables. Firm leverage has positive relationship with sustainability reporting quality, firm age, firm size, firm liquidity, and boar size. Firm liquidity has a positive relationship with sustainability reporting quality, firm age, firm size, and firm leverage. Board size has a positive correlation with firm age, firm size, firm leverage, but negative relationship with the sustainability reporting quality. However, correlations are not adequately sufficient to suggest functional causality between variables.

Table 4.
Heteroskedasticity Test Results

Dependent Variable	Chi2(1)	Prob> Chi2	Null (Ho)
SUREQ	2.95	0.0858	Rejected

Source: STATA 14 Output (2024)

Table 4 shows the p-value of 0.0858 predicts that there is no heteroskedasticity problem since the p>0.05. This implies that there is constant variance assumption of the GLS estimator.

Table 5.
Variances Inflation Factor Test

Variables	VIF
SURQ	2.11110
FAGE	3.90756
FIZE	2.51780
FLEV	5.12972
FLIQ	2.12793
BSIZ	5.14789

Source: STATA 14 Output (2024)

The amount of variation that has been inflated in a regressor's coefficient estimate due to collinearity with other regressors is explained by the variance inflation factor (VIF). As can be seen, VIF values more than 10 are often regarded as concerning; hence, no variable exhibited any significant signs of multicollinearity.

Table 6.
Regression Result

Variables	Coefficients	Robust Std Error	T-test	P > |t|
Constant	56.2762	47.0390	1.1962	0.2412
FAGE	-0.1704	0.0903	-1.8870	0.0619
FIZE	0.2673	0.1802	1.4832	0.0149
FLEV	0.2031	0.8820	0.2302	0.0029
FLIQ	0.8874	0.4991	1.7781	0.0006
BSIZ	0.7514	0.6521	1.1520	0.0001
R-Squared		0.7371		
F-Stat		4.9302		
P-Value		0.0032		

Source: STATA 14 Output, (2024). Statistical significance at 0.05 (5%) & 0.1 (10%) levels

Table 6 show a Generalized Least Squares (GLS) multiple linear regression result of moderating effect of Firm attributes proxies by Firm age (FAGE), Firm size (FSIZ), Firm leverage (FLEV), Firm Liquidity (FLIQ), and Board size (BSIZ) on Sustainability reporting quality. The result revealed a cumulative R^2 is 0.7371, which implies that the model explains about 73.71% of the systematic variations in the dependent variable with a degree of freedom at 5% which is the multiple coefficient of determinant gives the proportion of the total variation explained by the independent variables jointly. It indicates that the model has good explanatory power signifies about 34% of the total variation on sustainability reporting quality of the selected oil and gas companies in Nigeria. The F-Stat is 4.9302 (P-value = 0.002 is significant at 5% and suggest that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected. It is also indicative of the joint statistical significance of the model. The analysis of coefficients reveals FAGE has a negative (-0.1704) effect on SUREQ and not significant at 5% (p=0.0619). FSIZ has a positive (0.2673) effect of SUREQ and statistically significant at 5% (p=0.0149). The impact of FLEV is positive (0.2031) on SUREQ but statistically significant at 1% (0.0029). FLIQ is positive (0.8874) effect on SUREQ and statistically significant at 1% (p=0.0006). BSIZ has a positive (0.7514) of SUREQ and statistically significant at 1% (p=0.0001) respectively. The Generalized Least Squares regression estimates shows the R^2 values of 0.7371 typically smaller than what is seen for linear regression models (Norusis 2005).

The T-test shows that, the model is well fitted and components of firm attributes (FSIZ, FLEV, FLIQ, & BSIZ), are found to be positively and significantly related with at 5% level of significance as confirmed by the P-value (0.0032). While FAGE has a negative (-1.8870) impact on SUREQ. Thus, FLEV is the major factor affecting the sustainability reporting quality with highest positive coefficient of 0.8874, which indicate 5% level of significance with 95 percent confident level therefore, remains important for stakeholders. This means that the moderating effect of firm attributes are continuously increase the

sustainability reporting quality of the selected oil and gas companies in Nigeria. It seems that some oil and gas companies have still not realized the importance and need of sustainability reporting quality disclosure. Moreover, they have established themselves over time voluntary disclosing sustainability reporting quality. But to survive in a competitive era, investment in oil and gas company's sustainability reporting quality is necessary. Thus, confirms that the given model with independent variables firm attributes are seen to have a positive and significant impact on sustainability reporting quality. It is generally agreed that large companies have greater social obligation. Large companies are assumed to face more public exposure and often they would face more public exposure and often they would face more legitimate issues than smaller oil and gas companies. The study's conclusions conflict with those of Lucia and Panggabean (2018), who found no evidence of a significant association between corporate governance and a firm's Attributes and the disclosure of sustainability reports. Although the study supports the conclusions of Iliemena, R. O., Amedu, M. J. A., & Uagbale-Ekatah, R. E. (2023), who discovered a substantial and positive relationship between leverage and the degree of environmental reporting practices, Andreas, Desmiyawati and Wardi (2016) for Indonesian firms, Obeiteh, Ridzwana and Zaidi (2017) The analysis of coefficients reveals that on the overall, only firm size is seen as the only variable to having a positive and significant impact on sustainability reporting.

5. Conclusion and Recommendation

The study examined moderating effect of frim attributes on sustainability reporting quality of selected oil and gas companies in Nigeria. The research covered a period of five years ranging from 2018 to 2023. The result revealed that firm size, firm leverage, firm liquidity and Board size have positive significant effect on sustainability reporting quality. The findings further revealed that firm age has also been argued to have a negative influence on the sustainability reporting quality. The study therefore concludes that adherence to reporting standards and guidelines will put firms in good standing and a favourable ranking and eliminate avoidable fines and penalties that increase firm expenditures. The study also concludes that there are no generally accepted sustainability reporting guidelines, standards, or frameworks. Organizations are allowed to disclose any form of metric that they deem can promote their corporate image. The study also concludes that, to achieve sustainable development goals, there must be continued advocacy for each of the sustainability metrics (economic, social, governance, and environmental indicators), promoting an inclusive approach to development and incorporating a granular and local approach. Adding knowledge about firm age, firm size, liquidity, leverage, and profitability. This research can be used as an example of a case and give inspiration and information for future researchers related to firm age, firm size, liquidity, leverage, and board size. The readers are getting knowledge and information about firm attributes and sustainability reporting quality in the period of 2018 until 2023 that may be useful for making an investment decision, future research, and other decisions. The study recommends the need for improved sustainability disclosures for oil and gas companies in Nigeria. Sustainability Accounting Standard Board (SASB) should develop a universal sustainability standard to offer direction on quantifying, managing, and disclosing company's sustainability efforts. The board should adopt International Sustainability Accounting Standards (ISAS) that will incorporate the legal, accounting, religious, economic, political, geographical, educational, and cultural

disparities among nations. This will greatly advance the implementation of sustainability reporting quality.

Policy implications: The study is applicable to various stakeholders interested in sustainability reporting, including policymakers, non-governmental organizations, management teams, green investors and lenders, academicians, researchers, and practitioners. This study would be pertinent for global and international accounting bodies in shaping their perspectives on sustainability reporting quality. The study is limited in scope as it relies on selected oil and gas company, draws findings based on few indicators of ownership structure and firm attributes on sustainability reporting quality. As a result, there is no real evidence to support and generalised the research

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