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Environmental Accounting Practice and Firm Value of Quoted Oil and Gas Companies in Nigeria

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Abstract

The firm value of companies is essentially one of the measures of the effectiveness and managerial competence of the managers optimizing corporate resources. Evidence from research in recent times shows that meeting firm value expectations of shareholders has become a complex task considering Nigeria's infrastructural deficits and economic instability challenges prevalent in the country. Studies have shown that companies' sensitivity to environmental accounting practices tends to create good legitimacy, reputation and corporate brand capable of ensuring effective corporate performance and improved firm value. This study examined the impact of environmental accounting practices on the stock value of Nigerian oil and gas businesses. The Global Reporting Initiative checklist and secondary data from the corporations' annual financial reports were utilized in an expo facto research design. A total of 12 firms were selected using a purposive sampling technique from a population of 18 oil and gas firms quoted in Nigeria. The certification by the statutory auditors served as the foundation for the data's reliability and validity. Inferential statistics (multiple regression using panel data) was used to analyze the data. The study found that environmental accounting practices had a significant effect on the firm value of quoted oil and gas companies in Nigeria (Adj.R^2 = 0.0925; Wald test (3, 176) = 34.98; $p < 0.05$). Consequently, this study concluded that environmental accounting practice had a significant effect on the firm value of quoted oil and gas companies in Nigeria. The study recommended that managers should constantly prioritize sound environmental accounting practices in order to raise the expectations of the stakeholders and improve firm value.

Keywords: Environmental accounting practice, Economic accounting practices, Firm Value, Global reporting initiative, legitimacy, corporate resources.

1. Introduction

Countless efforts to implement the principles of transparency and accountability in public institutions by launching the Nigerian open contracting portal through the open government partnership, organizations have not yet prioritized proactive disclosure of information about their operations, according to the report (Awadzie et al., 2022; Ekundayo & Josiah, 2020). Strategic impact assessments are not conducted, and information on exploration and licensing is poorly disclosed. According to the study, the Minister still has the discretionary authority to issue licenses, and the bidding processes are still rife with delays, abuse potential, and a lack of transparency. Regarding taxes, the study said that the government continued to be negatively impacted by the fiscal regimes in the extractive industries, with the advantage going mostly to oil firms. Nigeria's oil industry had multiple difficulties in 2022, chief among them the gasoline shortage problems that struck various regions of the country and destroyed enterprises (Emeka et al., 2020; Etim et al., 2020).

Igbekoyi et al. (2021) noted the firm value of quoted oil and gas companies in Nigeria has witnessed a decline recently due to a drop in output brought on by crude oil theft and pipeline vandalism, the nation's oil income substantially decreased in the first half of the year. Nigeria, a nation that significantly relies on oil income to satisfy its necessities, was hampered in its efforts to grow as a result of the predicament, which was made worse by the escalating crude oil theft. Nigeria also spent a sizable portion of its oil profits this year on subsidies and the purchase of petroleum products due to its inability to refine oil domestically. The Russia-Ukraine war's high oil prices also raised the cost of importing petrol, raising subsidies.

The problem of achieving the desired firm value levels in recent times could be attributed to systemic issues and vulnerabilities the oil and gas companies had been exposed to weak competitive advantage (Emeke et al., 2021; Egbunike & Okoro, 2018). Nigeria has a rich history and potential in oil and gas. With estimated known reserves of 37 billion barrels of oil and 5 trillion cubic meters of natural gas, it possesses the greatest natural gas deposits and second-largest oil reserves in all of Africa. Around 70% of the nation's income comes from oil, which is now produced at 1.9 million barrels per day with a potential of 4 million barrels per day. Significant interferences from the policies and exchange volatility, government involvement, ambiguous legislation, corruption, and widespread oil theft are a few of the causes that have impeded the growth and firm value appreciation of the oil and gas companies in Nigeria.

The oil and gas companies operating in Nigeria have performed below the expectations of the stakeholders, and this has negative effects and implications on the firm value of the companies. Despite this, there are several other difficulties in effective firm value attainment among environmentally sensitive companies in Nigeria (Aguguom & Salawu, 2022; Kurawa & Shuaibu, 2022). These include environmental problems in the Niger Delta that are mostly the result of the international oil companies' negligence to adequate environmental accounting and security challenges in the Niger Delta where these companies operate. A significant concern for the industry is the gradual pollution of the Niger Delta's waterways and the devastation of flora and agricultural land caused by oil spills that happen during petroleum exploration, due to its inability to refine domestically and satisfy the oil production limit established by the Organization of Petroleum Exporting Countries (OPEC), Nigeria, one of the major producers of crude oil in the world, was unable to take advantage of the rising oil prices to increase the country's revenue (Akeem et al., 2016; Adegbie et al., 2020).

Environmental accounting is considered one of the guaranteed parts of effective growth and investment expansion of the companies in the oil industry. Acar and Temiz (2020) posited the application and implementation of environmental accounting otherwise green accounting enhances cost savings using greener technologies. The goal of environmental accounting is to include environmental expenses in business operations' financial performance. Green accounting should be included in the new model that policymakers use since it has been claimed that the gross domestic product overlooks the environment (Chen et al., 2019). Green accounting's main objective is to assist firms in understanding and managing any potential trade-offs between conventional economic goals and environmental goals. Additionally, environmental accounting expands the critical data of the companies that may be used to analyze policy concerns, which is beneficial given how frequently those crucial facts are ignored (Carnini-Pulino et al., 2022). Green accounting is believed to only guarantee weak sustainability, but this can be seen as a first step towards strong sustainability in the long run.

A framework for communicating the idea, status-historical, use, and preservation of natural resources which are primarily environmental assets as well as costs associated with environmental protection and resource management and control is provided by environmental accounting and, consequently, reporting. In the past, corporate social responsibility (CSR) has expanded beyond the income statement and more into the balance sheet for support and with the overarching goal of ensuring that all stakeholders can achieve their objectives within the corporate setting in a way that is morally right and, most importantly, environmentally friendly. Environmental accounting practice provides the stakeholders the volume of investments geared towards the protection of the environment, the soil and groundwater, noise as well as vibration abatement, protection of biodiversity, and landscape, and protection against radiation and conservation of the environment in all forms.

The Nigerian oil and gas companies have been linked with unprecedented environmental pollution and are not favourably predisposed to compliance with environmental regulations. Environmental compliance in Nigeria has been reported to be weak and the level of corporate commitment to ensure adequate investment to ameliorate the effect of environmental pollution still remains a concern as poor environmental accounting practice has prevailed in the Nigerianoil and gas industry for a long time (Akeem et al., 2016). There has been scanty empirical evidence of the extent of environmental accounting practice among oil and gas companies. According to Iliemena (2020); Mohammad et al. (2020), uncertainties of corporate investment by the oil and gas companies in Nigeria in environmental accounting practices is unpredictable, resulting from weak institutions and the uncooperative dispositional attitude of the oil and gas companies to show corporate responsiveness in regulatory and legal compliances is a major challenge in Nigeria.

To increase the firm value of investors in the oil and gas sector in Nigeria, the government initiated and implemented specific policies and reforms in the oil and gas sector. For instance, the direct controls and government intervention in oil and gas business investment resulted in the stifling of competition and resource misallocation to encourage investors (Ayambaet al., 2020; Awadzie et al., 2022). Removing interest rate restrictions in order to boost savings and boost allocative effectiveness; eliminating non-price credit rationing to lessen credit misuse and boost competitiveness in the oil sector was a welcomed development (Emeka-Nwokeji & Benjamin, 2019). Etim et al. (2020) noted the oil and gas investment was put into perspective by

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government policy and regulatory directives in the use of indirect monetary management in place of limiting individual banks' loans to the oil sector; this improved institutional governance and structure; strengthening the oil companies participating in the capital markets through regulatory reforms and measures to deal with financial crises; strengthening the connections between the legitimate and unofficial international and multinational companies in the oil and gas.

The problem of firm value among the oil and gas companies in Nigeria has been a concern as many of the companies have either shut down or relocated to other countries (Igbekoyi et al., 2021; Iliemena et al., 2020). The trajectory roles of effective environmental accounting practice played in repositioning the operational activities and firm value of the oil and gas companies in Nigeria had remained uncertain. While mindful of the significance of environmental accounting practice, the uncertainties of the extent the oil and gas compliance with environmental accounting practices that are capable of affecting firm value is one of the motivating factors for this study. In addressing the problem of the firm value of quoted oil and gas companies in Nigeria, the study hypothesized thus:

Research Objective: Examine the effect of environmental accounting practice on Tobin's Q of quoted oil and gas companies in Nigeria

Research Hypothesis H_{01}: Environmental accounting practice does not significantly affect Tobin's Q of quoted oil and gas companies in Nigeria.

The remainder of the paper was taken into account in the following manner: Sections two and three, respectively, addressed the literature review and methodology. The study presented data analysis, conclusions, and comments on findings in section 4. The conclusion, suggestions, and addition to knowledge were given in section 5.

2. Literature Review

2.1 Conceptual Review

Firm Value: The firm value is significantly encompassing to include all forms of managerial efficiency and optimal utilization of all available opportunities to further strengthen the value creation of the companies. According to Odoemelam and Okafor (2018),firm value considers the possible economic worth of a firm because of economic activities of the management geared towards value creation, corporate stock appreciation as a result of high managerial competence, good image and rising corporate reputation (Li et al., 2018; Marissa, 2019, Aguguom, 2020). Liu (2020) posited that the firm values area combination of years of optimal resource utilization, managerial proficiency and the ability to manage a friendly working environment to a corporate competitive advantage and strong efforts to remain active in market control and dominance. Firm value in another dimension is the worth and value of a company should a merger and acquisition is put on the table. Ogunode and Adegbie (2022) noted that environmental accounting practice has a strong link with the possible economic value creation and firm value of a company. When there is clear evidence of environmental compliance, it provides the veritable ground for the economic growth and performance of such companies.

Tobin's Q: Tobin's Q is considered a measure of firm value in relation to financial performance from the market perspective. The market and financial performance of a company have a direct connection with the extent of image and reputation subsisting between the management of the company and the stakeholders, leveraging on the level of transparency and accountability attributable to the organization. Martinico et al. (2018) noted that Tobin's Q is closely related to measures in evaluating the financial performance of companies from the market perspective since the market participants' responses are the reflection of the performance of the companies.

Environmental Accounting Practices: In this case, the environmental accounting practice is the ability of the companies to guide against environmental pollution and beyond that, ensure greenhouse gas control. This suggests that energy consumer conservation, the use of natural resources and sustainability of the business from the oil extraction to production through product refining down to market and distribution of the finished product (white product). The environment accounting practice considers in perspective the extent of investment in executing environmental policies and compliance with environmental regulations in relation to land, water and air pollution control measures and conservation of the environment. The policies in waste disposal and management, and policies in recycling (Okere et al., 2022; Simpson et al., 2021).

Economic Accounting Practices: Economic accounting practice is strategic and one of the sensitive components of the environmental accounting requirement that keep the managers of cooperation strategically uneasy and difficult to attain (Asiri et al., 2020; Badingatus & Ukhti, 2021; Martinico et al., 2018). This kind of accounting focuses on the economic value of gathering, calculating, and assessing expenses related to the usage of energy and tangible resources like coal, metal, wood, and other metals. According to traditional accounting methods, these expenses go under the umbrella term of overhead, but environmental management accounting enables accountants to use activity-based costing concepts to more precisely connect these costs with different projects or events (Zaid et al., 2020; Yaya et al., 2018; Olayinka & Oluwamayowo, 2014).

Social Accounting Practices: The social accounting practice is aimed at the effort of the companies to make adequate and reasonable investments to implement social policies from the perspectives of employee rights and rights to union membership, adequate training and career development opportunities, equal opportunities and fair treatment both in employee recruitment and welfare packages (Singh et al., 2020; Solikkah et al., 2020). According to Yao and Liang (2019), social accounting practice considers safety and health policies to promote the safety of workers in a safe environment. Effective working relationships with the local communities as well as the host locals where the oil and gas companies operate. The ability of the companies to have a good relationship with the environment is not to pollute the environment but ensure the companies have a sufficient budget to enjoy peace, and industrial cordiality with the stakeholders and work under a societal legitimacy for smooth operations that would usher high productivity and improve firm value.

2.2 Theoretical Review

Agency Theory: On the contrary, some studies have criticized suggesting that some of the control mechanisms and costs of bridging conflicts of interest are economically ineffective and unnecessarily expensive. According to Thachenko et al. (2019), to protect their interest, the shareholders unwittingly encroach on the strategic investment decisions of the various companies. The interference of the shareholders and their monitoring of third parties tend to restrict the competence display of the managers as their actions and decision tend to be controlled by the directors appointed by the shareholders who in most cases take decisions for the managers to implement. Abdallah (2018) noted that principal-agent conflicts of the problem remain unnecessary if absolute trust is allowed to subsist, and where there is a lack of fairness and both parties fail to play their required roles for each other benefit both the principals and the agents alike. According to Ahmadi and Bouri (2017), agency problems and conflicts of interest tend to flourish where there is the absence of adequate motivation and incentives for the agents. The relevance of agency theory in contemporary business and corporate organization has become a reality as adequate regulations and effective incentives packages by the shareholders for the managers could reduce the conflicts of interest as well as reduce the gap of information asymmetry. Agency theory is considered relevant and appropriate to this study considering the prevalence of conflicts of interest between the managers and shareholders in oil and gas companies in Nigeria Company's operational activities.

Stakeholder Theory: Assumptions suggest that stakeholders are indispensably important in the smooth running and effective growth of corporate organizations. According to Artene et al. (2020), stakeholder theory assumes that managers tend to protect the interest of the shareholders at the expense of the other stakeholders. Chen et al. 2019) noted that stakeholders possess the key to corporate effective performance and ensuring corporate competitiveness of companies. Underplaying the role of stakeholders could cause serious damage to the image of the companies. Ayamba et al. (2020) reported that organizations require societal acceptance and on the other hand, the corporate acceptance of societal social norms and valuesis equally important in the success or failure of organizations. The stakeholder theory assumes that the role of peaceful coexistence between communities and the organization is significant in the going and corporate existence. Supporters of stakeholder theory suggested that the corporate structure can never be complete without the position of the stakeholders. For instance, Dhar and Asharaful (2021) reported that companies to remain in existence must recognize the role and significance of corporate sustainability involving the recognition of economic, social and environmental perspectives in the course of business operations (Leung & Snell, 2019). Consistent with this understanding, Okpala and Iredele (2018) noted that corporate strategic decisions and companies that underscore the importance of stakeholders' protection in relation to social responsibility, transparency and accountability may not have a competitive edge over their peers in the industry.

2.3 Empirical Review

Similarly, the study of Giannopoulos et al. (2022) studied the possible implications and effects of environmental disclosure on the financial performance of the companies selected for the study. Secondary data were used extracted from the annual audited reports of the companies chosen for the study from the Norwegian database for the period. Descriptive statistics and multi-regression analysis were explored for the data analysis and the result revealed that there are significant implications of environmental disclosure compliance among pollution-sensitive companies when there are strong legal and regulatory institutions in operation ready to sanction erring companies.

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Jun et al. (2022) empirically examined the impact of economic, social and environmental accounting practices on the share market value and return on assets of companies from the perspective of the level of capital and intangible assets. The study employed secondary data as documented data were extracted from the annual reported financial statements of the 25 companies purposively selected for the study. The study employed a pooled panel data analysis and the result of the analysis showed that while economic and social environmental index had a significant effect on return on assets, environmental indicators exhibited a negative and insignificant effect on market share price and return on assets of the companies examined in the study from the period under consideration. Similar results were documented in the studies of Igboke et al., 2021; Iliemena et al., 2020; Lueng & Snell 2019). The results showed that each of the studies showed a significant effect in tandem with our findings.

Kurawa and Shuaibu (2022) studied environmental accounting practice and financial performance. The study sort to determine the influence of environmental accounting practice on factors measuring the financial and non-financial performance of companies in Nigeria. The study used secondary data obtained from annual published financial reports of 15 selected companies quoted in Nigeria. Descriptive statistics and multiple regression analysis using panel data regression analysis. The result of the analysis showed that environmental accounting practice had a significant relationship with the return on equity of the companies. In addition, the study showed that environmental accounting had a significant influence on the return on equity and non-financial performance of the companies in Nigeria under consideration for the period. Similarly, some studies by Giannopoulos et al. (2022); Etim et al. (2020); Emeke et al. (2021)documented results were in tandem with the results obtained in our study, suggesting the significance of environmental accounting practice in enhancing corporate performance.

Emeke et al. (2021) studied green accounting from the social, economic and environmental accounting points of view. The study explored the use of secondary data and checklists in line with the Global Reporting Initiative index. The study considered the implication of reporting compliance of consumer goods companies that were sensitive to environmental pollution and waste control management. Using 10 selected companies' data obtained from the annual financial reports, the study used inferential statistics and pooled panel data, the study revealed that green accounting practice is significantly required to improve the performance of the companies. The study also found that environmental accounting exerted a significant effect on firm performance for the period investigated. The result obtained in the study of Emeke et al. (2021) is in consonant with the reported results by some previous studies of Kurawa and Shuaibu (2022); Igboke et al. (2021)

Igboke et al. (2021) empirically look into the determinants of green accounting and its influence on the performance of companies quoted in Nigeria for a period of 10 years. An expo facto research approach was employed using secondary data collected from the audited and published financial statements of the companies purposively selected. The study considered the influence of corporate compliance with environmental accounting practices on economic and social performance. The study used pooled regression analysis and the Global Reporting Initiative checklist. The study found that economic, social and environmental are the determinants of environmental accounting. The result further showed that companies operating in Nigeria hardly comply with environmental disclosure, hence the level of compliance had a weak significant effect on the performance of the companies.

Etim et al. (2020) considered the implications of environmental accounting practice on the performance of the selected companies in Nigeria operating in the oil and gas sector for a period of 15 years spanning from 2011 to 2011 to 2021. The study regression using the Ordinary Least Square method revealed a negative effect. Furthermore, the result of the regression showed that environmental accounting practice exhibited a positive but significant influence on the economic value creation of the companies in the oil and gas selected for the study. The result of the study is in tandem with the results obtained in some studies carried out by Giannopoulos et al., 2022; Jun et al., 2022; Leung & Snell n(2019) who equally obtained a positive effect of adequate and consistent environmental accounting practice on the operations of the pollution-sensitive companies operating in Nigeria.

Iliemena (2020) used 10 firms to research the potential effects and influence of environmental accounting on the corporate performance of companies listed and engaged in the oil and gas industry for 15 years. The data for the study came from the yearly financial statements of the 10 firms that were chosen using a purposive selection strategy. The study used an expo factor research method. The study took into account the use of inferential analysis and descriptive statistics for the data regression analysis. The results of the regression analysis showed that there was a strong correlation between company success and environmental accounting. More so, the study found that environmental accounting performance had a significant effect on return on assets and Tobin's Q of the quoted companies in Nigeria selected for the study. The outcome was shown to be in line with the findings of several earlier research conducted by Kurawa and Shuaibu (2022); Igboke et al., 2021; and Emeke et al., 2021).

Similarly, to this, Leung and Snell's (2019) study investigated the potential effects and effects of social, economic, and environmental disclosure on the performance of oil and gas businesses in Nigeria. For the study, an expo facto research design was used. Data were taken from the firms' published annual financial reports. The results of the regression study revealed a substantial correlation between the performance of Nigerian oil and gas businesses and environmental characteristics of social and economic variables. Additionally, the study demonstrated that environmental disclosure had favourable effects on the performance of the oil and gas corporations examined in Nigeria.

Whereas studies have considered environmental accounting, there is a dearth of studies researching the effect of environmental accounting on the firm value of quoted oil and gas companies in the Nigerian literature, creating a researchable gap in the literature. Besides, inconsistencies and mixed results have prevailed in the literature, suggesting the need for more empirical studies to provide new empirical results. Consequently, this study contributes to knowledge and bridges the gap and extent of the significance of environmental accounting

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practice in furthering corporate legitimacy of the companies, corporate reputations and image brand expanding economic performance capable of improving the firm value of the quoted oil and gas companies in Nigeria

3. Methodology

This study used an ex-post facto research approach in analyzing the effect of environmental accounting practices on the firm value of quoted companies from oil and gas in Nigeria. An *ex-post facto* was explored since it considered the grouped of the quantities that already existed by comparing the dependent and independent variables from past events known as "after the facts" research. The study addressed the implication and cost implication of activities of the environmental pollution-sensitive companies in their effort to conserve and protect the environment from pollution and the effect on their firm value. The population of the study consisted of 18 oil and gas companies listed in Nigeria, the study selected 12 of the companies using a purposive sampling technique for a period of 15 years covering from 2008 to 2022. The criteria for the selection as based on the availability of data on environmental accounting practice records in the annual financial statements of the companies. Data for the study were sourced from secondary data and a checklist using the Global Reporting Initiative (GRI) indicators. The annual financial statements of the companies formed the source from where data were extracted for a checklist for the study, using a dummy variable of "1" where there was evidence that the companies reported economic, social and environmental, otherwise "0" where there was no evidence in the financial statements.

The study dependent variable of firm value was surrogated using Tobin's Q which put into consideration the financial performance of the companies from the market perspective. Environmental accounting practice was measured using environmental tripod indicators of economic, social and environmental measures of environmental accounting practice.

Specification of Model

The Model

The specification of the model of the study was based on the available information relevant to the checklist.

Functional Relationship

TQ = *f*(ENCAP, SOCAP, ECOAP)

Model

$$TQ_{it} = \beta_0 + \beta_1 ENCAP_{it} + \beta_2 SOCAP_{it} + \beta_3 ECOAP_{it} + \mu_{it}$$

Where

TQ = Tobin's Q, ENCAP = Environmental accounting practice, SOCAP = Social accounting practices, ECOAP = Economic accounting practices.

Measurement of Variables

Table 1: Measurement of Variables

Variables	Abbrev	Measurement	Sources
Dependent Variable			
Tobin's Q	TQ	$TQ_{it} = \frac{(\mathrm{BVA_{it}} + \mathrm{MVE_{it}} - \mathrm{BVE_{it}})}{\mathrm{BVA_{it}}}$	Aguguom & Salawu (2022)
Independent Variables			
Environmental Accounting Practices Indicators	ENCAP	Composite Score of all the items under Environmental Protection Indicators in the checklist.	Igboke et al. (2021)
Social Accounting Practices Indicators	SOCAP	Composite Score of all the items under Environmental Social indicators in the checklist.	Leung and Snell (2019)
Economic Accounting Practices Indicators	ECOAP	Composite Score of all the items under Environmental economic indicators in the checklist.	Adegbie et al. (2020)

Source: Researchers Compilation (2023)

Table 2: Environmental Accounting/Sustainability/GRI Index indicators with the measurement scales.

SN	Details	Checklist & Measures
1	To what extent does the company provide information on Environmental Accounting Practice Index?	0 = No information on Environmental Accounting Practice Index (Co2), not in apart subsection. 1 = Only information on environmental protection policy/**environmental accounting/sustainability/GRI Index Statement** that is concerned with Environmental Accounting Practice Index. 2 = Explanation that describes what happens and the significant impact. 3 = Explanation that describes what happens and the significant impact with the actual ***figure recorded***.
2	To what extent does the company provide information on Social environmental Accounting Indicators?	"0" = No information on the Social Environmental Accounting Indicators Disclosure Index, not in apart subsection. "1" = Only information on Social environmental protection policy/**environmental accounting/sustainability/GRI Index Statement** that is concerned with the Social Environmental Accounting Indicators Disclosure Index.
3	To what extent does the company provide information on Economic Accounting Practice Indicators?	"0" = No information on Economic Accounting Practice Indicators not in apart subsection. "1" = Only information on economic accounting practice/**environmental accounting/sustainability/GRI Index Statement** that is concerned with Economic Accounting Practice Indicators

Source: EY (2023)

4. Data Analysis, Result and Discussions

4.1 Regression Analysis

Table 3: Regression and Post-Estimation Results

Variables	Coeff	Std. Err	T-Stat	Prob.
Constant	29.0119	63.1837	0.46	0.653
ENCAP	0.2234	0.063	3.54	0.003
SOCAP	-2.2116	19.271	-0.11	0.910
ECOAP	-3.1529	8.6051	-0.37	0.720
Observations	180	180	180	180
Adj R^2	0.0925			
F-Stat/Wald Stat (Prob)	$F_{(5, 201)} = 34.98$ (0.0000)			
Hausman Test	$chi^2_{(5)} = 2.00$ (0.8498)			
Testparm Test/LM Test	$F_{(14, 174)} = 3.31$ (0.0343)			
Heteroskedasticity Test	$chi^2_{(5)} = 0.10$ (0.7490)			
Autocorrelation Test	$F_{(1, 13)} = 52.229$ (0.000)			
Cross-sectional Dependence	0.410 (0.6821)			

Source: Author's Work (2023). Dependent Variable: TQ = Tobin's Q, Independent Variables: ENCAP = Environmental accounting practice, SOCAP = Social accounting practice, ECOAP = Economic accounting practice. Note: all the analysis was tested at a 5% significance level

Post-Estimation Results for the Model

As shown in Table 3, the Hausman test result indicated that random effect is the appropriate estimator given that its null hypothesis states that there is the presence of an unsystematic difference in the model coefficients, with a p-value of 0.8498 being above the chosen 5% level of significance. The Hausman test's conclusion that the random effect estimation approach is the best estimating technique for the Model is supported by the result of the confirmation test (Testparm), which was conducted and had a p-value of 0.0343. As a consequence, we selected a random effect estimator. The model only has an autocorrelation problem, according to the results of the heteroskedasticity test (p = 0.7490), autocorrelation test (p = 0.000), and cross-sectional dependence test (p = 0.6821). Therefore, the random effect regression estimator with Drisc/Kraay standard error was used to conduct the study.

Regression Equation Results for the Model

$TQ_{it} = \alpha_0 + \beta_1 ENCAP_{it} + \beta_2 SOCAP_{it} + \beta_3 ECOAP_{it} + \mu_{it}$

$TQ_{it} = 29.0119 + 0.2234 ENCAP_{it} - 2.2116 SOCAP_{it} - 3.1529 ECOAP_{it}$

The model reported an adjusted R square of 0.0925 and wald-chi2 of 34.98 (sig. = 0.000), indicating that the model has a statistically significant fit. These suggest that the model is useful in predicting Tobin's Q. However, the low adjusted R square value indicates that the model is not very effective in explaining the variation in Tobin's Q, The table above shows the estimated coefficients for the independent variables, along with their standard errors, t-statistics, and p-values. The coefficient for economic accounting practice ENCAP is 0.2234 (t-statistic = 3.54, p-value = 0.003), which suggests that environmental accounting practices had a positive effect on Tobin's Q. Evidently, environmental accounting practices (ENCAP) is the only variable that has a statistically significant relationship with Tobin's Q, as its p-value is less than 0.05.

In contrast, the coefficient for social accounting practice SOCAP is -2.2116 (t-statistic = -0.11, p-value = 0.910), indicating that social accounting practices had no significant impact on Tobin's Q. The p-values for SOCAP, are above 5 per cent which is the chosen significance level, indicating that these variable do not have a statistically significant impact on Tobin's Q.

The coefficient for economic accounting practice ECOAP is -3.1529 (t-statistic = -0.37, p-value = 0.720), which implies that economic accounting practices had no significant relationship with Tobin's Q. The p-values for ECOAP, are above 5 per cent which is the chosen significance level, indicating that these variable do not have a statistically significant impact on Tobin's Q.

Overall, the result of these joint statistics based on F-statistics analysis indicates that environmental accounting practices had a positive impact on Tobin's Q, which suggested that firms with more environmental accounting practice experience higher Tobin's Q rates. In contrast, the other variables in the model social accounting practices and economic accounting practices (SOCAP, ECOAP) do not have a statistically significant relationship with Tobin's Q. At a 5 % level of significance and degree of freedom of (3, 176), the Wald-test of 34.98 with a probability value of 0.000. Based on this, the study rejected the null hypothesis and accepted the alternative. Consequently, this implied that environmental accounting practices had a significant influence on Tobin's Q of oil and gas companies in Nigeria.

Discussion of Findings

The research in the model looked at how listed Nigerian oil and gas firms' Tobin's Q scores were impacted by environmental accounting practices. The study's regression analysis produced a variety of findings. Only environmental accounting practises exerted positive significance, with economic accounting practises exerting negative significance while social accounting practises also had a negative influence on Tobin's Q. Nevertheless, a substantial beneficial influence was revealed by the combined statistics that included every explanatory variable. This suggested that environmental accounting practises in this study had a very considerable impact on Tobin's Q of the Nigerian oil and gas businesses. This outcome is in line with findings from a few other investigations by Giannopoulos et al. (2022); Jun et al. (2022); Kurawa and Shuaibu (2022); Emeke et al. (2021); Igboke et al. (2021); Etim et al. (2020); Iliemena (2020); Leung and Snell (2019) as the result obtained in this study was found to be consistent with these studies.

5. Conclusion, Recommendations and Contribution to Knowledge

Conclusion: The study investigated the effect of environmental accounting practices on firm value surrogated using Tobin's Q. The empirical result revealed mixed reactions to individual effects on Tobin's Q as each of, the economic accounting practices, and social accounting practice had insignificant effects, but environmental accounting practices exerted significant effect. However, based on joint explanatory variables analysis results showed that environmental accounting practices had a positive effect on Tobin's Q of oil and gas companies in Nigeria. The study, therefore, concluded that environmental accounting practice has the ability to exert a significant effect on the firm value of oil and gas companies in Nigeria. Furthermore, effective compliance with the legal and regulatory requirements in relation to environmental accounting created opportunities for the companies to improve their legitimacy, expand performance and create more wealth for the owners through improved firm value.

Recommendations: Arising from the reported findings in this current study, the study recommended that the government should render quality services that will ensure strong effective infrastructures to assist the performance of the oil and gas companies in Nigeria companies and strengthen the regulatory and environmental enforcement institutions to adequately sanction appropriately the defaulting companies. The government should improve the safety and security requirements of the oil and gas companies and their location from vandalism and kidnapping to allow their full production capacity of impacting their firm value in Nigeria. Evidently, the result further revealed that negative and insignificant effects were recorded in relation to economic and social accounting practices, suggesting weak corporate governance practice, hence the management of the companies should ensure effective corporate governance in line with international best practices is instituted.

Implication of Finding: The result as reported in the result has an implication for regulators who were saddled with the responsibility of ensuring effective environmental accounting practices in compliance with legal regulatory requirements. The result showed that each of the economic accounting practices and social accounting practices had a negative effect on Tobin's Q of oil and gas companies in Nigeria, this has a negative implication on the image and reputation of the companies. The regulators of business activities regulators' inability to ensure effective corporate governance practices and proper composition of the audit committee in companies operating in Nigeria have negative implications as weak institutions which could imply incompetence, lack of professionalism, and compromising dispositions unhealthy in a country's regulation environmental protection for the healthy environment for the benefit of all.

Contribution to Knowledge: This study provides the significance of environmental accounting otherwise the novelty research in green accounting and its ability to empirically reveal the effect of each of the components of environmental accounting on firm value. The study revealed that firm value could be impaired when the companies fail to adequately implement and comply with environmental accounting practices in their operational activities.

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