

Short Term Debt Ratio and Environmental Disclosure: A Study of Oil and Gas Firms in Nigeria

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Abstract

The study investigates the effect of short-term debt ratio on environmental disclosure of listed oil and gas firms in Nigeria. Ex-post facto research design was employed in this study. The population of the study consisted of all the nine (9) Oil and Gas firms listed on the Nigerian Exchange (NGX) Group as at 31st December, 2024. The data were obtained from annual reports and account from 2014-2024 of the sample Oil and Gas firms. Descriptive statistics was utilized to describe the mean, median, standard deviation, kurtosis, skewness, maximum and minimum values and Panel Least Square (PLS) regression analysis was employed to test the hypothesis via E-Views 10 statistical software. The study upholds that short-term debt ratio has significant and positive effect on environmental disclosure of listed oil and gas firms in Nigeria. In line with the conclusion of this study, recommended that in order to sustain the positive relationship between short-term debt and environmental sustainability disclosure, this study suggests that firms should continue with the usage of short-term debt in financing operations so as to improve and sustain their financial performance.

Key words: Short-term debt, Environmental sustainability and Oil & Gas firms.

Introduction

Several means of external financing exist; however, certain reasons exist which compel business owners to opt for debt financing. Funding through debts proves to be critical to business success as it ensures that the business owner is constantly conscious of running the business well so as to be able to pay back such debts. Also, it can be less costly as interest paid on money borrowed for business activities are tax deductible (Onyema, 2022). Debt financing instruments like bonds ease the pressure on bank lending, particularly longer-term lending, and allow a wider range of corporate credits to access investment markets and seek more finance than the banks or government agencies could provide. Debt financing takes many forms. The essence of debt is that the borrower must repay the funds along with agreed-upon service charges such as interest and loan origination fees. Environmental sustainability requires enterprises to invest more human, material and financial resources. Internal funds are usually used for daily business turnover, and most companies may not be financially capable to be responsibly involved in environmental sustainability activities if they only rely on internal funds, so the environmental sustainability activities of enterprises mainly rely on external funds. Among the external funds, debt financing is the most important source, an indication that the level of debt financing might likely have a great impact on environmental sustainability. Providing sustainability can be costly

and those costs are primarily incurred by the companies' shareholders. Unless there are tangible benefits associated with such reporting, in the absence of regulation, the motivation for the shareholders to continue allow companies to provide sustainability reports remain questionable. Therefore, this study investigated the effect of debt financing on environmental sustainability disclosure of listed Oil and Gas firms in Nigeria. The study investigates the effect of short term debt ratio on environmental remediation disclosure of listed oil and gas firms in Nigeria.

Literature Review

Environmental Remediation Disclosure

Environmental remediation disclosure means reporting all costs and expenses of actions or activities to cleaning up or removal of hazardous materials from the environment; preventing or minimizing the further movement, leaching or migration of hazardous materials in the environment; preventing, minimizing, or mitigating the release or threatened release of hazardous materials into the environment, or injury or damage from such release, and comply with the requirements of any environmental laws. Environmental remediation costs include, without limitation, costs and expenses payable in connection with the foregoing for legal, engineering or other consultant services, for investigation, testing, sampling, and monitoring, for boring, excavation, and construction, for removal, modification or replacement of equipment or facilities, for labor and material, and for proper storage, treatment, and disposal of hazardous materials (Cheng, Wang, Keung, & Bai, 2017). Remediation cost means all costs associated with performing work to remediate contamination of real property or groundwater, including engineering and other professional fees and expenses, costs to remove, transport and dispose of contaminated soil, costs to "cap" or otherwise contain contaminated soil, and costs to pump and treat water and monitor water quality (Blankespoor, De-Haan & Marinovic, 2020).

Short Term Debt Ratio

Short-term debt, also called current liabilities, is a firm's financial obligations that are expected to be paid off within a year (Fernando, 2022). Short-term debt describes liabilities that are due to be paid within one year. A short-term debt ratio indicates the likelihood that a company will be able to deliver payments on its outstanding short-term liabilities. Short-term debts include liabilities with a repayment time frame of less than one year from initial issue (such as commercial paper) rather than the sum of all debt payments (final and interim) due within a coming 12-month period (Ahern, 2020). Short-term debt, also called current liabilities, is a firm's financial obligations that are expected to be paid off within a year. It is listed under the current liabilities portion of the total liabilities section of a company's statement of financial position (Mansa, 2022). If the current liabilities are higher than the cash and cash equivalents, this tells us that the company might be in poor financial health, and is in danger of not being able to meet its obligations and pay off all of its debts (Rathburn, 2022).

$$\text{Short Term Debt Ratio} = \frac{\text{Short Term Debt}}{\text{Total Assets}}$$

Empirical Studies

Bassey, Effiok and Eton (2013) examined the impact of environmental accounting and reporting on organization performance of selected oil and gas companies in Niger-Delta region of Nigeria. Data was analyzed using Pearson's Product Moment Correlation Coefficient after a sample of 30 non-listed firms was arrived at using random and stratified sampling techniques. Data were gathered from primary and secondary sources covering the period 2008-2010. The study found

that the level of environmental disclosure had positive association with firm's profitability. Arowoshegbe and Emeni (2014) examined the relationship between shareholders' wealth and debt-equity mix of quoted companies in Nigeria. The study was based on a panel data set from 1997 to 2011 comprising sixty non-financial companies. The principal explanatory variable for each of the models was Debt Ratio (DR). The results of the study conform to the a-priori expectation that there is a significant negative relationship between shareholders' wealth and debt-equity mix of quoted companies in Nigeria.

Uwalomwa, *et al* (2018) provided an insight into the bi-directional relationship between sustainability reporting and firm performance of quoted deposit money banks (DMBs) in Nigeria. While the population size comprised of all deposit money banks quoted on the floor of the Nigerian Stock Exchange, judgmental sampling technique was used in the selection of the sampled banks. Considering the period 2014-2016, the annual report and stand-alone sustainability reports of the selected banks were analyzed through the use of content analysis and coded in order to obtain the sustainability disclosure index. The panel regression technique was used to analyze the data. The study observed that the market price per share of the samples firms had a significant negative influence on sustainability reporting. In addition, the study also found out that sustainability reporting had a significant positive influence on revenue generation of the sampled firms. Naciti and Giovanna (2022) explored the relation between business practices related to climate change and environmental performance. Using an international sample of analysis from 2013 to 2017, the study examined how managerial incentives, public policy, disclosure and responsibilities to executives on climate change, as corporate governance factors, affected a firm's environmental performance. By employing multiple regression analyses, the independent variables - incentives, public policy, disclosure and responsibilities - showed to improve the environmental performance in terms of reduction of GHG emissions. In addition, results showed that stakeholders' engagement seems less relevant in the US with respect to other countries, this could be related to the US public opinion which exerts lower pressures on companies to deal with climate change. Houqe, Opare, Zahir-ul-Hassan and Ahmed (2022) explored the effect of carbon emissions and agency costs on firms' financial performance by utilizing data from 2323 US firms that disclosed their environmental information to CDP from 2007 to 2016. The multiple regression results indicated that firms with higher carbon emissions experience lower performance as the market reacts negatively. Further, firms with both higher carbon emissions and higher agency costs have lower performance. The study also investigated year-on-year change in firm performance and found that, keeping agency costs constant, a change in carbon emissions leads to lower performance. Zarefar, Agustia and Soewarno (2022) investigated the impact of sustainability reporting on firm performance. The study also examined the moderating effect of family ownership on the relationship between sustainability disclosure and firm performance. The research sample consists of 850 primary and secondary sector companies listed on the Indonesian stock exchange between 2014 and 2020. The study generated its results using a panel model with Generalized Least Square (GLS) regression. The study concluded that sustainability disclosure has a positive impact on the financial performance of market- and accounting-based companies. Additionally, family businesses strengthen the link between sustainability disclosure and firm performance.

Methodology

Ex-post facto research design was employed in this study. This study was treated as *ex-post facto* research since it relied on historical data.

The population of the study consisted of all the nine (9) Oil and Gas firms listed on the Nigerian Exchange (NGX) Group as at 31st December, 2024. They are: Ardova Plc, Conoil Plc, Eterna Plc, Japaul Gold and Venture Plc, MRS Oil Nigeria Plc, Oando Plc, Seplat Energy Plc, Total Nigeria Plc, and Capital Oil Plc.

Sample Size and Sampling Technique

Since the entire population size was used as sample hence, no need for sample size.

Source of Data

The data to be used in this study were collected mainly from secondary source. These data were obtained for eleven (11) years annual reports and account from 2014-2024 of the sample Oil and Gas firms.

Method of Data Analysis

The thrust of this study was to ascertain the effect of debt financing on environmental sustainability disclosure of listed oil and gas firms in Nigeria over a period of eleven (11) years from 2014 to 2024. *Ex-post facto* research design was adopted for the study. This study made use of panel data from secondary sources through the sampled firms annual reports and accounts. Descriptive statistics was utilised to describe the mean, median, standard deviation, kurtosis, skewness, maximum and minimum values of the study variables via E-Views 10 statistical software. Inferential statistics of this study was carried out using:

- i. **Pearson Correlation Analysis:** This is a good measure of relationship between two variables which tells us about the strength of relationship and also the direction of relationship.
- ii. **Panel Least Square (PLS) regression analysis:** was used to predict the value of the dependent variable based on the value of the independent variable.

Moreover, content analysis was adopted in this study. A content analysis was performed on the sample environmental reports to study how organizational boundaries are set for the whole report and how operational boundaries are set for specific environmental indicators. Any data using fair standard meanings for a specific group of people can be subjected to content analysis (Baker & Schaltegger, 2015). This study adopted the Global Reporting Initiative (GRI) framework disclosures according to the G4 guidelines for the purpose of developing the environmental sustainability disclosure indices. Environmental sustainability disclosure was evaluated by 21

Model Specification

This study adapted and modified the model of Uyagu, Okpanachi, Nyor and Muhammad (2017):

$$ED = \beta_0 + \beta_1 DER_{it} + \beta_2 PROF_{it} + \mu_{it} \quad \text{eq (i)}$$

Where :

ED = Emission Disclosure

DER = Debt to Equity Ratio

PROF = Profitability

Consequent upon the adapted model, the following regression equation was constructed:

$$ERD_{it} = \beta_0 + \beta_1 STDR_{it} + \mu_{it} \quad \text{eq (i)}$$

Where:

β_0 = Constant term (intercept)

β_{it} = Coefficients of Debt Financing estimated for firm i in period t

μ_{it} = Error term/unexplained variable(s) of firm i in period t

ERD_{it} = Environmental Remediation Disclosure of firm i in period t

$STDR_{it}$ = Short Term Debt Ratio of firm i in period t

Decision Rule

Accept the null hypothesis (H_0) if the p-value of the test is greater than 0.05, otherwise reject and accept the alternate hypothesis (H_1).

Data Analysis

Descriptive Statistics

	ERD	STDR
Mean	0.674545	1.106364
Median	0.730000	1.100000
Maximum	0.910000	1.670000
Minimum	0.370000	0.470000
Std. Dev.	0.185761	0.353278
Skewness	-0.492973	-0.322062
Kurtosis	2.077613	2.347855
Jarque-Bera	0.835490	0.385087
Probability	0.658530	0.824858
Sum	7.420000	12.17000
Sum Sq. Dev.	0.345073	1.248055
Observations	99	99

Source: E-Views 10.0 Output, 2025

Table 1 shows the descriptive statistics of study variables. The observation of 99 in table 4.1 is as a result of the panel data set with the combination of time series data and cross sectional data (11years x 9 firms) . The involvement of sampled firms in the disclosure of environmental remediation activities is averagely 67.45%, a maximum of 91% percent and a minimum of 37% environmental remediation disclosure level with a standard deviation of 18.5. The observed average for DER is 4.755455, with a maximum of 10.58000, minimum of 1.460000 and standard deviation of 2.787190. The observed degree of debt to asset ratio is 78.55percent with a minimum of 54 percent, a maximum of 91 percent and a standard deviation of 0.1029. The observed average for debt to capital ratio in the sampled companies 7.1091 units, with a maximum number of 15.15 units, a minimum of 3.27 units and a standard deviation of 3.7237. On the average, the mean value of short-term debt ratio is 1.1064 units, a maximum STDR of 1.670 units and standard deviation of 0.3533. For long term debt ratio, the mean value stood at 34.27%, the maximum long-term debt ratio stood at 66%, a minimum of 14% and a standard deviation of 14.77%.

Table 2: Pearson Correlation Matrix

	ERD	STDR
ERD	1.0000	
STDR	0.2630	1.0000

Source: E-Views 10.0 Correlation Output

From the findings on the correlation analysis between ERD and the other study variables in table 2, the study found that there a positive correlation exist between STDR and ERD at a coefficient of 0.3681.

Test of Hypothesis

H₀₁: Short term debt ratio has no significant effect on environmental remediation disclosure of listed oil and gas firms in Nigeria.

H₁: Short term debt ratio has significant effect on environmental remediation disclosure of listed oil and gas firms in Nigeria.

Table 3: Panel Least Square (PLS) Regression Analysis testing the effect of Short Term Debt Ratio on Environmental Remediation Disclosure

Dependent Variable: ERD

Method: Panel Least Squares

Date: 02/01/26 Time: 15:52

Sample: 2014 2024

Periods included: 11

Cross-sections included: 9

Total panel (balanced) observations: 99

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.524259	0.059561	8.802098	0.0000
STDR	0.135819	0.051487	2.637929	0.0097
R-squared	0.166937	Mean dependent var	0.674545	
Adjusted R-squared	0.157318	S.D. dependent var	0.178018	
S.E. of regression	0.172841	Akaike info criterion	-0.652897	
Sum squared resid	2.897772	Schwarz criterion	-0.600470	
Log likelihood	34.31839	Hannan-Quinn criter.	-0.631685	
F-statistic	6.958670	Durbin-Watson stat	0.560933	
Prob(F-statistic)	0.009717			

Source: E-Views 10.0 Panel Regression Output

Interpretation of Regression Analysis

Table 3 shows that there is a significant and positive relationship between short term debt ratio and environmental remediation disclosure of listed oil and gas firms in Nigeria. This can be observed from the beta coefficient (β_1) of 0.135819 with p value of 0.0097 which is significant at 5%. This indicates that short term debt has a positive relationship with environmental remediation disclosure.

$$ERD = 0.524259 + 0.135819STDR$$

The deduced inference from the model shows that holding other factors constant, one naira increase in short term debt ratio will cause environmental remediation disclosure to increase by 13.58%. Overall, the F-statistic of 6.958670 with an associated Prob(F-statistic) of 0.009717 is statistically significant at 5%, which reveals that the model is well fitted, while the coefficient of determination; R^2 of 0.166937, explains the variation of the dependent variable (ERD) as a result of the changes in the independent variable (STDR). It can be said that STDR has a predictive power of 16.69% in affecting ERD, while the remaining 83.313% is accounted for by other factors which are not captured in the model.

Decision

Since the P-value of the test = 0.009717 is less than 0.05 (5%), this study upholds that short-term debt ratio has significant and positive effect on environmental remediation disclosure of listed oil and gas firms in Nigeria at 5% level of significance.

Discussion and Conclusion

The regression coefficient result for hypothesis revealed that there is a significant and positive relationship between short term debt ratio and environmental remediation disclosure of listed oil and gas firms in Nigeria. This can be observed from the beta coefficient (β_1) of 0.135819 with p value of 0.0097 which is significant at 5%. This indicates that short term debt has a positive relationship with environmental remediation disclosure. The deduced inference from the model shows that holding other factors constant, one naira increase in short term debt ratio will cause environmental remediation disclosure to increase by 13.58%. Overall, the F-statistic of 6.958670 with an associated Prob(F-statistic) of 0.009717 is statistically significant at 5%, which reveals that the model is well fitted, while the coefficient of determination; R^2 of 0.166937, explains the variation of the dependent variable (ERD) as a result of the changes in the independent variable (STDR). It can be said that STDR has a predictive power of 16.69% in affecting ERD, while the remaining 83.313% is accounted for by other factors which are not captured in the model. Consequent upon the P-value of the test = 0.009717 which is less than 0.05 (5%), this study upholds that short-term debt ratio has significant and positive effect on environmental remediation disclosure of listed oil and gas firms in Nigeria. The findings of this is in line with the results of Okoli and Okafor (2023); Okafor, Egbunike and Amahalu (2022); Oyedokun, Egberioyinemi and Tonademukaila (2019) but opposes the findings of Naciti and Giovanna (2022); Santos-Jaen and Serrano-Madrid (2021) Conclusively, this present study holds that short-term debt financing has a significant effect on environmental sustainability disclosure of listed oil and gas firms in Nigeria. In line with the conclusion of this study, recommended that in order to sustain the positive relationship between long-term debt and environmental sustainability disclosure, this study suggests that firms should continue with the usage of long-term debt in financing operations so as to improve and sustain their financial performance.

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