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Sustainable Finance Model and Performance of Listed Oil and Gas Multinationals in Nigeria

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ABSTRACT
This paper evaluated the effect of sustainable finance on corporate performance of ten (10) quoted oil and gas companies over 15 years (2008-2022). The paper specifically disaggregated sustainable finance (regressor) into eco-friendly finance, green finance and social finance while corporate performance (regressand) was measured by return on investment (ROI). Data were drawn from all the sampled firms. The paper adopted the panel data estimation technique since the variables exhibited both cross section units and time series features. The regression estimate evidenced that, eco-friendly finance had a high retarding effects on ROI. However, green finance has high meaningful effects on ROI. However, social finance became highly value additive. Hence, the paper concludes that, green finance and social finance are highly instrumental to the corporate performance (ROI) of sampled firms throughout the reviewed periods. Consequently, the regulatory authorities of the sampled firms need to re-evaluate their cost centres with a view to determine the cost centre that reduces the company's ROI.
Keywords: Sustainable Finance, Eco-Friendly Finance; Green Finance, Social Finance, Corporate Performance; Return on Investment; Oil & Gas Multinationals.

1.0 INTRODUCTION

Over time, the necessity for businesses worldwide to adopt financially sound practices has persisted throughout time, making it one of the major global concerns of the 21st century. This is because, for businesses to continue operating as legitimate entities, they must choose sustainable finance. The rationalization behind this is due to the rapidly increasing rate at which many stakeholders, particularly those in developing countries, live below the poverty line and the rise in social, environmental, and climate risks brought on by the loss of biodiversity. More so, the inability of oil and gas multinationals remains another issue of concern. These concerns are regarded as the greatest long-term global concern, according to the World Economic Forum's (WEF) 15th Global Risks Report, which was published in January 2020 (Franco, 2020). Hence, it is believed that the only way for businesses worldwide—including those in the oil and gas industry—to satisfy the demands of the present and future generations is through sustainable financing (Raworth, 2017). According to Durrani, Rosmin, and Volz (2020), the equitable distribution of natural resources among current and future generations makes sustainable finance an effective financial strategy. It is on this note that, the United Nations developed a sustainable financial strategies called the established the Sustainable Development agenda/goal (SDG) 2030 (Durrani, Rosmin & Volz, 2020). These SDG serve as the standard for the global community's duty to advance environmental and social sustainability (Migliorelli, 2021). In order to accomplish these goals, robust global regulations have been established to integrate the flow of funds allocated to the purpose of sustainability. Under the meantime, the Nigerian government ratified the Paris Agreement in 2015. Under the condition of foreign help, this promise increases to 45%. This was established in 2017. The

aforementioned suggests that sustainable finance has become a potent tool for a company looking to preserve positive stakeholder relations and ultimately achieve the broad goals of sustainable development. Various sustainable finance proxies recorded in literature are eco-friendly finance, green finance, and social finance. The eco-friendly finance aspect emphasizes that, for businesses to address economic issues, companies need to shift their business strategies (models). Meanwhile, the green finance aspect emphasizes a company's deliberate attempts to allocate its financial (capital) resources toward investing in ecologically sustainable ventures. In other words, this aspect therefore facilitates shift to a low-carbon economy (Tur-Porcar, RoigTierno, & Mestre 2018). In a similar vein, the social finance dimension emphasizes the management of assets that provide financial returns together with quantifiable benefits to society and the planet.

However, companies (especially oil and gas multinationals) are still free to choose how to disclose their involvement in sustainable finance in their annual reports, despite the fact that doing so is essential for addressing the plethora of social and environmental issues that Nigeria and other countries around the world are currently facing. It is understandable that, despite the fact that the majority of oil and gas corporations rendered the surrounding area uninhabitable, they are still not subject to any legal requirements regarding the information they are required to reveal. The goal of the current study is to further break down the three components of sustainable financing.

Again, till date, accounting scholars are yet to unanimously agree as to whether the more firms are economically, socially, and environmentally friendly, the more they achieve higher returns in terms of ROI. For example, Udeagha and Muchapondwa (2023); Okolie and Igaga (2020); Madaleno and Vierra (2020); Felix (2021) reported that, sustainable finance is instrumental to higher firms' financial performance. However, Munir, Irfan, and Malik (2022); Erhirhie and Ekwueme (2019); Zamil and Hassan (2019) reported that, investment in sustainable finance has an adverse effect on corporate performance of firms since the cost associated with firm's adoption of sustainability finance sometime outweighs the benefits therein and as such, one should not expect that, the impact sustainable finance has on firm performance is direct at all times. Notwithstanding, the aforementioned empirical studies failed to examine the linkage between sustainable finance and return on investment. As such, they could not give a clear picture on the extent to which sustainable finance affect return on investment of oil and gas multinationals. Hence, the current study is motivated towards examining the effect of three dimensions of sustainable finance on return on investment of oil and gas multinationals.

Again, accounting authorities have not yet reached a consensus on whether organizations that produce better ROI are also more socially, economically, and ecologically sustainable. For instance, studies by Udeagha and Muchapondwa (2023); Okolie and Igaga (2020); and Madaleno and Vierra (2020) have shown that improved financial performance for businesses is a direct result of sustainable finance. But according to Munir, Irfan, and Malik (2022); Erhirhie and Ekwueme (2019); and Zamil and Hassan (2019), investments in sustainable finance have a negative impact on businesses' corporate performance because adopting sustainable finance can come at a cost that sometimes outweighs the benefits. Consequently, sustainable finance retards business performance instead. In light of this, the current study looked at the effect of eco-friendly finance, green finance and social finance on listed multinationals Nigerian oil and gas industry.

Justifiably, the paper is divided into five major sections. While the first section is dedicated to the introduction, the second section is dedicated to literature review. Here, emphasis is made on conceptual, theoretical and empirical issues that surround the subject. Meanwhile, the third section is dedicated to the research methods. Here, emphasis is made on the research design, population, sampling technique, data source, analytical technique and variable measurement, operationalization and Apriori expectations. More so, the fourth section is dedicated to the research findings and discussions. Finally, the fifth section is dedicated to the conclusions and recommendations.

2.0 LITERATURE REVIEW

The term "sustainable finance" involves incorporating sustainability practices into their investment activities, to achieve healthy environmental and social conditions without compromising the economic benefits. Again, it is the combination of economic, social, and environmental issues into a firm's business model (Schoenmaker & Schramade, 2018). Meanwhile, corporate performance is a firm's ability to effectively use her resources in such a way to generate operational and financial results (Taouab & Issor, 2019). Ehiedu and Priscilla (2022) define corporate performance as the combination of effectiveness and efficiency. This emphasizes how firms efficiently and effectively transform inputs into outputs. Siepel and Dejardin (2020) see corporate performance as a firm's ability to maximize profits.

Ehiedu, Onuorah and Mbagwu (2022) declare profit as the driving force towards future growth and there are multiple ways to measure profit but the most widely used measure is through financial ratios such as return on asset-ROA, earning per share-EPS, return on equity-ROE, ROI etc. According to Diamastuti, Muafi, Fitri, and Faizaty (2021), companies should endeavour to fulfill the interests of society as a whole as well as the rights of their shareholders. Business organizations must thus make trade-offs between their financial performance and their social responsibilities. The ultimate goal of a business is typically thought to be maximizing profits since it increases the firm's value to shareholders. However, in order to accomplish this, businesses frequently violate corporate regulations, harm the environment and ecological system, and jeopardize employee safety (Skouloudis et al., 2019).

2.1. Eco-friendly Finance and Corporate Performance:

Eco-friendly finance is a broad set of decision making strategies aimed at achieving economic growth by rejecting wasteful short-term processes and embracing the planet's long term well-being. It therefore stresses that, that in order for businesses to function in a sustainable way, they must make sure that resources are used in the most effective and responsible way possible in order to generate the highest possible operational profit. As a result, no company can be deemed economically viable if it does not employ resources in the most effective and ethical way possible (Asuquo, Dada, & Onyeogaziri, 2018). The rationalization here is that, if more attention is placed on addressing economic issues by rejecting wasteful short-term processes and embracing the planet's long term well-being, oil and gas firms are expected to achieve higher financial performance in terms of ROI.

Following the legitimacy theory, economically centric firms will achieve higher social approval and ROI than firms that are not. Meanwhile, the stakeholder theory stresses that, a firm's ROI is dependent on the ability of such firm to meet the diverse needs of her stakeholders of which the investors are one. By implication, ROI is dependent on the extent to which a firm is economically centric.

From empirical viewpoint, studies on eco-friendly finance and firm performance are relatively mixed. For example, Udeagha and Muchapondwa (2023); Okolie and Igaga (2020); Madaleno and Vierra (2020); Menike (2020) reported that, eco-friendly finance improves financial performance. However Frempong, Adu-Yeboah, Hossin, and Adu-Gyamfi (2021) evidenced that, sustainability-oriented supplier partnership, environmental, economic sustainability, influenced firm performance indirectly. Hence, the paper hypothesizes:

$H0_1$: Eco-friendly finance does not significantly affect the ROI of listed multinationals in the Nigerian oil and gas industry

2.2 Green Finance and Corporate Performance

Green Finance is simply defined as the allocation of resources to investments that provide environmental benefits while ensuring that the said firm achieves higher ROI. Various measures of green finance include but are not limited to: consumption of fuel, energy conservation, and emissions of greenhouse gases, risk to the environment posed by suppliers, and environment risk posed by clients. According to Ehiedu and Eyamu (2023) and Ighoreje and Ozigbo (2023), there are three main sectors of "green financing": The rationalization here is that, if more attention is placed on addressing the rising cases of environmental degradation by being more environmentally inclined, oil and gas firms are expected to achieve higher financial performance in terms of ROI.

Following the legitimacy theory, environmentally responsive firms will achieve higher social approval and ROI than firms that are not. Meanwhile, the stakeholder theory stresses that, a firm's ROI is dependent on the ability of such firm to meet the diverse needs of her stakeholders. By implication, ROI is dependent on the extent to which a firm invest in green finance.

From empirical viewpoint, studies on green finance and firm performance are relatively mixed. For example, Udeagha and Muchapondwa (2023); Okolie and Igaga (2020); Madaleno and Vierra (2020); Menike (2020); Oprean-Stan, Oncioiu, Iuga, and Stan (2020) reported that, inadequate environmental, social, governance and risk rating/management has a huge bad influence on the financial performance of reporting firms. However, Munir, Irfan, and Malik (2022); Erhirhie and Ekwueme (2019); Zamil and Hassan (2019) reported that, investment in social finance affect corporate performance adversely since the cost associated with green finance sometime outweighs the benefits therein. Hence, the paper hypothesizes:

$H0_2$: Green finance does not significantly affect the ROI of listed multinationals in the Nigerian oil and gas industry

2.3 Social Finance and Corporate Performance

Social finance is an investment that seeks a measurable social, cultural, and/or environmental impact as well as a financial return for investors. Put differently, social finance is a supply chain that establishes connections with its stakeholders, including its customers, employees, suppliers, and the larger community in which it works. In this regard, the public is now aware of all social business activities and is closely watching the trade in illegal weapons, civil rights violations, gambling, labour law violations, workplace conditions, child labour, employee exploitation through low pay and long hours, gender discrimination, and unpaid maternity and sick leave (Kuhn, 2020). Within the context of multinational oil and gas firms social finance promotes social cooperation and investment in local networks, fosters social assorted variety, considers human rights and respects for human rights, and ensures that the need for equity and fairness in the sharing of social and economic resources (Okolie & Igaga, 2020). The rationalization here is that, if more attention is placed on social finance disclosure, oil and gas firms are expected to achieve higher financial performance in terms of ROI.

Following the legitimacy theory, socially responsive firms will achieve higher social approval and ROI than firms that are not. Meanwhile, the stakeholder theory stresses that, a firm's ROI is dependent on the ability of such firm to meet the diverse needs of her stakeholders. By implication, ROI is dependent on the extent to which a firm invest in social finance.

From empirical viewpoint, studies on social finance and firm performance are relatively mixed. For example, Udeagha and Muchapondwa (2023); Okolie and Igaga (2020); Madaleno and Vierra (2020) reported that, sustainable finance is instrumental to higher firms' financial performance. However, Munir, Irfan, and Malik (2022); Erhirhie and Ekwueme (2019); Zamil and Hassan (2019) reported that, investment in social finance affect corporate performance adversely since the cost associated with social finance sometime outweighs the benefits therein. Hence, the paper hypothesizes:

$H0_3$: Social finance does not significantly affect the ROI of listed multinationals in the Nigerian oil and gas industry

3. RESEARCH METHODS

This study adopted the longitudinal research approach/design with focus on ten (10) oil and gas multinationals using the census sampling technique. The study adopted the panel data methodology because the variables exhibited both time series and cross-sectional data features. The key pre-esitmation tests conducted in the most appropriate model for the study was Hausman Test. Accordingly, the Hausman test was used to choose between the Fixed Effect Model (FEM) and the Random Effect Model. The null hypothesis of the Hausman test is that the REM is most appropriate for the study. However, the alternative hypothesis holds that the FEM is most preferred.

Justifiably, the research followed both the descriptive and inferential analysis. Meanwhile, to ensure that the regression results are fit for the formulation of informed policies, the model accounted for multi-

collinearity, normality; Heteroskedasticity and mis-specification. The E-Views 9.0 was used as a tool for running the regression results. Econometrically, the model is expressed as:

$$ROI_{it} = \beta_0 + \beta_1 ECOF_{it} + \beta_2 GROF_{it} + \beta_3 SOCF_{it} + \varepsilon_{it} - \text{Eqn. 3.1}$$

Where:

Table 1: Variable Measurement & Apriori Expectation

Symbols	Variable	Measures	Expected Sign
ROI	Return on Investment	Profit After Tax to Total Investments	Nil
ECOF	Eco-friendly Finance	If a firm report ECOF, denoted by 1 otherwise 0	Positive
GROF	Green Finance	If a firm report GROF, denoted by 1 otherwise 0	Positive
SOCF	Social Finance	If a firm report SOCF, denoted by 1 otherwise 0	Positive

Note: $\beta_1 - \beta_3$ = *Parameter Estimate*; & ε_{it} = *Error term*

4. RESULTS

4.1. Preliminary Analysis

Table 2 presents the summary statistic estimates while table 3 presents the correlation analysis. Both test the behavioural patterns of each of the variables under study.

Table 2: Summary Statistics

Variables	Mean	Max	Min.	Std. Dev.	Obs.
ECOF	0.6448	0.8889	0.1667	0.1609	150
GROF	0.6337	0.8000	0.2000	0.1648	150
SOCF	0.6331	0.8889	0.2222	0.1798	150
ROI	0.0661	0.8856	0.0003	0.1407	150

Source: E-Views Version 9.0 (2023)

Table 2 reported that, the sampled firms reported average ROI values of 0.066067 but varied by 0.1407. Again, ROI reported maximum values of 0.8856 percent and minimum values of 0.0003. Also, eco-friendly finance has highest and least value of 0.888900 and 0.1609, respectively. This suggests that there is little variability, or dispersion. Further, the green finance has a maximum & minimum value of 0.8000 and 0.2000, respectively. In terms of variability, green finance has an average value of 0.6337 but dispersed by 0.1648. Likewise, the highest and lowest social finance value was 0.8889 and 0.2222, respectively. Meanwhile, the average social finance value 0.6331. Also, social finance deviated by 0.1798. The fact that the standard deviation estimate is smaller than the mean value suggests that there is little variability, or dispersion.

Table 3: Correlation Analysis

	ROI	ECOF	GROF	SOCF
ROI	1.0000			
ECOF	-0.7028	1.0000		
GROF	0.4119	-0.0448	1.0000	
SOCF	0.3189	0.0191	0.0194	1.0000

Source: E-Views 9.0 (2023)

Table 3 demonstrates that, though their degrees of association vary, green finance and social finance exhibit positive correlations with ROI with corresponding correlation values of 0.4119 and 0.3189. However, there is a negative association among financial leverage, firm size, eco-friendly finance and ROI. Nevertheless, no regressor had a coefficient value higher than 70%. This suggests that there is extremely little chance of a multicollinearity issue among the regressors. To confirm this, the multi-collinearity test was introduced (See Table 4).

Table 4: Multicolinearity Test

Variable	Variables	VIF	TOV	Conclusions
ECOF	Regressor	1.9059	0.5247	Free from Multicolinearity Issues
GROF	Regressor	1.6784	0.5958	Free from Multicolinearity Issues
SOCF	Regressor	1.9037	0.5253	Free from Multicolinearity Issues
Average		1.8293	0.5486	Free from Multicolinearity Issues

Note: VIF-Variance Inflation Factors; TOV –Tolerance Value
Source: E-Views 9.0 (2023)

Table 4 reported average VIF value of 1.8293>10 and average TOV of 0.5486>0.10. .Hence, the paper reaffirmed that, the model is free from multicollinearity problems.

Table 5: Other Robustness Tests

Other Robustness Tests	F-Statistics	Prob.
Heteroskedasticity Test	2.0954	0.3607
Ramsey Reset Test	0.6308	0.4284
Hausman Test	2.8203	0.9011

Source: E-views 9 (2023)

The Heteroskedasticity Test reported a prob. value of 0.3607 evidencing that, the model spreads evenly while the Ramsey Reset Test reported that, all the variables are well-specified. Meanwhile, the Hausman test with p-value of 0.9011 proved that, the Random effect model is most appropriate model for this paper. However, the model corrected for variable perturbation issue (Oboro & Onuorah, 2022).

4.2. Regression Results

The REM estimate is shown in table 6 having evidenced that, the model is fit for prediction:

Table 6: Panel EGLS

Dependent Variable: ROI

Balanced Panel Observations: 150 (Cross Sections=10 & Periods)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.3161	0.1287	10.2289	0.0000
ECOF	-0.7062	0.1447	-4.8788	0.0000
GROF	0.4153	0.2014	2.0615	0.0421
SOCF	0.4046	0.1110	3.6449	0.0004
Weighted Statistics				
R^2	0.5823	Mean dependent var.		0.0590
Adjusted R-squared	0.5201	Durbin-Watson (D-W) stat		2.0190
F-statistic	2.9311	Prob(F-statistic)		0.0081

Source: E-views 9 (2023)

Table 6 reported R^2 value of 58.23% and adjusted R^2 value of 52.01%. By implication, 58.23% of the variation in ROI is jointly explained by Eco-friendly finance, green finance and social finance. Meanwhile, the remaining 41.77% variance in ROI is explained by the error term. Also, the F-statistic of 2.931071 with a p-value of 0.0081 suggests that the model is significant. Furthermore, the Durbin-Watson (D-W) statistics of 2.0190 indicates the absence of autocorrelation in the model.

The regression estimate evidenced that, eco-friendly finance had a high retarding effects on ROI such that, if less attention is placed on eco-friendly finance, ROI of oil and gas multinationals would rise by a high value of 70.62%. Specifically, green finance also have high meaningful effects on ROI such that, if less attention is placed on green finance, ROI of sampled firms would fall by 41.53%. However, attention

need to be placed on the high level of toxicity, neglect and degradation recorded by the activities of oil and gas multinationals over the years.

The study affirmed that, social finance became highly value additive. These result is in support of the findings of Madaleno and Vierra (2020); Appiah, jianguo and Kofi (2020) Amacha and Dastane (2018) but deviated sharply from the findings of Menike (2020); Maher, Ali, Hameedi, and Almagtone (2019); Clarissa and Rasmini (2018); Asuquo, Dada, and Onyeogaziri (2018).

CONCLUSION AND POLICY RECOMMENDATIONS

The paper concludes that, green finance and social finance are highly instrumental to the financial performance (ROI) of sampled firms throughout the reviewed periods. Hence, we made the following submissions:

1. The regulatory authorities of the Nigerian oil and gas industry need to re-evaluate their cost centres. This is with a view to determine which of the cost centres that reduces the sampled firms' ROI.
2. The regulatory authorities of the Nigerian oil and gas industry must encourage, oil and gas multinationals to address the environmental issues caused by their activities.
3. To achieve a desirable ROI, the managers of the oil and gas industry should continue to cultivate a healthy work-life balance, donate to a social cause, and at the same time they should emphasize the importance of health and safety.

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