

## Original Research Article

### **Green Accounting Practices and Business Health of Listed Oil and Gas Firms in Nigeria (2012-2021)**

#### **ABSTRACT**

This study examines the effect of green accounting practice on business health of listed oil and gas firm in Nigeria. Objectively, the study focuses on the propriety ratio and earnings per share as the proxies for business health. Ex-post facto research design is adopted because it aimed at obtaining important information on the status of specific phenomenon without any manipulation of the situation. The philosophical approach that was adopted is positivism. The study adapted the model used by Olayinka and Oluwamayowa (2017) which expressed financial performance proxied by return on asset as a function of the adoption of green accounting practice disclosure. The green accounting practice disclosure was captured with waste management practice disclosure, environmental protection practices disclosure and pollution prevention practices disclosure. Theoretically, this discovery upholds the tenets of stakeholder's theory that if the firm strive to report on their green activities, they would ultimately achieve optimal business health. Also, it was discovered that safety related practices disclosure had a negative insignificant effect on earnings per share of listed oil and gas firms in Nigeria to the tune of -0.0749074 ( $p=0.761>0.05$ ). This implies that a 1% increase in Safety related practices disclosure would engender a 0.07% decrease in earnings per share. This effect can be explained by the fact that inability of the management to make the right choice among risky alternatives. Consequently, it was discovered that waste management practices disclosure had a negative and insignificant effect on earnings per share to the tune of -0.0155705 ( $p=0.964 > 0.05$ ). This outcome is against the expected positive effect and by implication, it connotes that with just a 1% increase in waste management practices disclosure, earnings per share will reduce by 0.02%. The inference of this discovery is that waste management practices disclosure has no potency to significantly influence earnings per share of listed oil and gas firms in Nigeria. It is negative, probably because avoidance or ineffective waste reduction or waste avoidance tend to maximize cost in the organization, thereby resulting to low performance and sustainability. Finally, it was revealed that green restoration practices disclosure had a negative effect on propriety ratio and earnings per share. However, the negative effect is significant for earnings per share to the tune of -0.5270926 ( $p=0.000<0.05$ ) against the insignificant effect on propriety ratio with the coefficient and probability value of -2.781 ( $p=0.356>0.05$ ). By implication, this means that earnings per share and propriety ratio would reduce by 0.53% and 2.78%, when green accounting practices in terms of green restoration practices disclosure increase by 1%. Through the findings which were carried out in the study, it was concluded that green accounting practices have the capacity to influence the business health of listed oil and gas firms in Nigeria.

**Keywords:** Business health, Green accounting, Nigeria, Oil and gas.

## **1.1 Introduction**

Universally, businesses have increased the productivity and development of many nations. People venture into business to satisfy the needs and wants of the masses with the aim of making profit. According to Olayinka and Oluwamayowa [1], a business is any legitimate activity or chain of activities embarked upon by an individual or individuals to produce goods and services to satisfy identified wants and needs at a profit. The relevance of business to the development of the masses cannot be overstressed. Businesses of any kind create more employment opportunities for the unemployed and uphold the development of the economy. Moreover, a higher percentage of people living in developing nations embark on business activities to enhance their standard of living. Business firms, particularly those that produce oil and gas, engage in the production and marketing of oil and gas products which drive the economy of oil-producing nations like Nigeria. The relevance of these firms to the well-being of the economy stimulates various stakeholders to show greater concern about their business health.

Business health begins with an assessment function, that is, a comparison of the actual performance with the established standards for the business entity. Businesses that contribute to the development of an economy significantly are said to be efficient in operation. Thereby, such businesses demand greater evaluation of its strengths and weaknesses in the highly competitive business world. The health of a business can be measured financially or non-financially [2]. Among the instruments to measure the financial health of business firms include Earnings per share and propriety ratio. However, several factors affect the financial health of businesses across the world, most especially in Nigeria. Among these factors is a green accounting practice. According to Asuquo, Dada and Onyeogaziri [3], green accounting practice is an accounting system which covers the indirect costs and economic values of business plans and decisions. Green accounting practices aim to promote the efficiency and effectiveness of the environmental management. It helps to provide adequate information on the contribution of business organization to the standard of living of the people within its environment. Its contribution could either be positive or negative. Green accounting practice disclosure can take several forms, according to Aifuwa [4], and this could be as a result of the operational peculiarities of businesses. Water, air, noise and land pollution are all associated with exploratory activities such as oil and gas exploration and mining. Based on this note, the study investigates the impact of green accounting techniques on the business health of Nigerian listed oil and gas companies.

With advancements in technology, corporate operations, and procedures, industrialization and globalization have broadened company tactics throughout the world. Economic activity and competitiveness are booming, and as a result, the environment, which is a vital component of human existence, is suffering [5]. Clear water, air, land, ecosystems, energy, biodiversity, and other natural aspects are being degraded and transformed, posing a danger to environmental sustainability. The adoption of a mechanized agricultural system incorporating large-scale farming for increased production has resulted in the loss of plants and animal habitats, and the extinction of endangered species. Over time, stakeholders increased awareness of environmental concerns has heralded the need for organizations to disclose information about proper environmental management.

Exploration of oil and gas resources by oil-producing firms in Nigeria, both onshore and offshore, has far-reaching visible environmental and socio-economic consequences. Oil and gas operations have altered the ecosystem and biological constitution, resulting in ecological harm, pollution, and landscape ruin. Interference with dangerous chemicals puts employees' health and safety at risk. As a result of oil and gas operations, the environment is not spared from waste, posing a threat to environmental sustainability. The host communities where oil and gas explorations take place are underdeveloped, which leads to youths' restlessness and militancy [1].

Empirically, few research works have been carried out concerning green accounting practices and the business health of firms both locally and internationally. For instance, Ijeoma [6], Ahmed, Zakaree and Kolawole [7], Oraka and Egbumike [8], Olayinka and Oluwamayowa [1], Aruna and Neenu [5], Ucheagwu, Akintoye and Adegbe [9] and Emmanuel, Elvis and Abiola [10] focused on green accounting practices and performance of firms. However, none of the aforementioned studies focused on propriety ratio and earnings per share as the proxies for business health.

Based on the studies available at the disposal of the researchers none of the studies provide green accounting with waste management practice disclosure, safety-related practice disclosure and green restoration practice disclosure in Nigeria. In a similar view, none of these studies focused on the listed oil and gas firms in Nigeria. The analysis method of most previous studies was also based on linear regression [8, 10]. This is a gap this study bridged with the use of panel regression. To fill the identified gaps, the current study examined the effect of green accounting

practice on the business health of listed oil and gas firms in Nigeria covering a period of 10 years (2012-2021).

## **2.0 Literature Review**

### **2.1 Conceptual Review**

#### **2.1.1 Green Accounting Practices**

Conceptually, different scholars have defined green accounting practices based on different views and perspectives. Ochotorena [11] defined green accounting as an accounting system which covers both indirect costs and economic values of business plans and decisions. Enahoro [12] claims that the definition of the word “disclosure” must be contextualized in order to have a meaningful understanding of green information disclosure. According to Amahlau [13], disclosure in its broadest definition entails the dissemination of secret information and its consent. As a result, Ochotorena [11] defined green or environmental disclosure as the disclosure of information regarding an institution's relationships with society. More specifically, the process of disseminating information to discharge environmental accountability.

Green information disclosure is the means in which corporations can notify the community and its numerous branches of various actions connected to the environment [3]. The environment contributes to mankind's existence and activity. The environment provides natural resources for the creation of commodities and services for human use. It also absorbs trash from manufacturing and consumption, as well as supporting life and other human endeavors. The environment provides resources for human activity, as a result, waste absorption services (dispersion or recycling of wastes) and environmental services contributes to both productivity and human wellbeing. The components of green accounting practices as discussed in this study include waste management, safety related, and green restoration practice disclosure were investigated.

##### **2.1.1.1 Waste Management Practice Disclosure**

It is a common knowledge that in the operations and productions of any economy, waste is unavoidable. According to Department for Environment, Food and Rural Affairs (DEFRA), as stated in Akinlo and Iredele [14], waste is a component of home, business, and government economic operations; it contributes to economic activity through resource recovery (energy). To ensure a clean environment and a healthy society, waste management entails applying the waste

hierarchy through the 3Rs (reduce, reuse and recycle). Waste reduction according to Miradha et al. [15], may be done by minimizing material inputs to goods with high trash potentials, waste categorization, and the deployment of modern waste processing facilities. Waste reuse entails the use of waste as resources for the same or different purposes. That is, it is using waste as resources for the same or similar tasks, whereas waste recycling entails additional processing of waste for a variety of various reasons. The disclosure of a company's waste management strategy paints a positive picture of the company's commitment to eco-efficiency, which has an impact on performance because consumers will be more willing to demand products that are environmentally friendly throughout their entire life cycle, i.e. use fewer resources and produce less waste and pollution.

#### **2.1.1.2 Safety Relation Practices Disclosure**

Employees in the Nigerian oil and gas industry are particularly sensitive to toxic compounds in the workplace, which compromise their health. The demand for transparency on healthy and safer working conditions is gaining attraction as a broad concept that affects employees' quality of life as well as having a substantial societal impact. Employee health and safety refers to an employee's physical, mental and emotional well-being as it relates to his job obligations, and has a beneficial influence on the attainment of corporate goals [16]. Employee health and safety disclosures are reports aimed at maximizing the protection of employees against accidents in an organization.

#### **2.1.1.3 Green Restoration Practices Disclosure**

The removal of pollutants or toxins from water and soil is simply known as green restoration or environmental remediation. These waste products or toxic chemicals are eliminated for human health protection, business health maintenance and environmental restoration at large. The elimination of pollutants or contamination from the environment, the reuse of materials that would otherwise be discarded, the restoration of water to its original state, and the efficient use of technology and resources are all part of green restoration [17]. Environmental restoration according to Enahoro [12], is the process of assisting the recovery of the environment from degradation or destruction through remediation, rehabilitation, reclamation and restoration. According to Imoobe and Iroko [18], the restoration process affects stakeholders in various ways,

and their value may not be appreciated until they understand the benefits of restoration. As a result, it is critical that all stakeholders are involved in green or environmental restoration choice. The efforts towards green restoration involve compliance to green rules and regulations guiding the practices of environmental accounting so as to ensure a well-performing, stable and sustainable health. Literature reveals contentions on the effect green regulations aimed at restoration practices have on the health. The neoclassical views the effect of environmental regulations as damaging to business despite its social desirability while in modern times, it is believed that a proper and well-designed regulation can lead to improved business health as it would inspire and facilitate innovation.

### **2.1.2 Business Health**

Universally, business activities improve the productivity and output of many countries. Business contributes significantly to the development and growth of any nation, particularly developing nations. This is made known due to the fact that a significant portion of people living in developing nations undertake business activities to enhance their standard of living. Also, business activities influence the creation of job opportunities to many who are jobless in the nation. The most significant of all, is the contribution of business activities to the development of the nation via taxation. Of all the various sources of revenue to the government to cater for the need of the populace, taxation contributes significantly to the total revenue generated on annual basis. Expectedly, most of the forms of taxation are incurred directly or indirectly by the various forms of business in a given nation. Thus, one could conclude that business is the yardstick for the survival of a given nation.

According to Ahmed, Zakaree and Kolawole [7], a business can be defined as any legitimate activity embarked upon by a private individual or group of individuals to produce or distribute goods and services to the final consumer in-order to satisfy their identified wants and needs at a profit. Explaining this, business is simply referred to as buying and selling activities at a profit. These activities could be carried out by an individual or group of individuals. A business carried out by an individual is known as sole proprietorship or one-man business, while a business carried out by two or a group of individuals could either be partnership business or corporate liability business. From the perspective of Olowokere, Adeniran and Onifade [19], a company or other entrepreneurial entity that engages in commercial, industrial or professional activity is known as a business. Businesses can either be for-profit or non-profit organizations. Limited

liability firms, sole proprietorships, corporations, and partnerships are all examples of business types. Normally, business of all forms experiences some illnesses just like human beings do. This could be seen through reduction in profit margin, reduction in sales turnover, decline in profit and many more. Thereby, the health of a business needs to be examined on regular basis to avoid its sudden demise.

Akor and Okey [20] conceptualized business health as a current comprehensive evaluation of the crucial elements of a business. This begins with an assessment function, that is, comparison of the actual performance with the established standards for the business entity. Business health involves a comprehensive diagnostic on the business and the outcome will define the strength of the business while pointing out ways of improving the business [13]. Business health is synonymous to business performance. In similar view, Al-Kurdi, Alshurideh and Alnaser [21] posited that business health is the capability to differentiate the end results of organizational activities. It is the relevant results of an organization after effective utilization of the various limited resources. The health of a business can be measured financially or non-financially [2]. However, in the context of this study, business health would be measured from the financial aspect in terms of earnings per share and propriety ratio.

### **2.2.1 Earnings per Share (EPS)**

EPS is a frequently used financial ratio among investors all over the world. It is extremely important for investors/shareholders who rely on a profitable dividend. Sang, Chune and Jason [22] defined EPS as a foundation for calculating other capital market measures. EPS is the fraction of a company's profit or loss that is assigned to ordinary stock and shareholders. EPS is an indicator that is used to calculate the prospective earnings/returns on investment in a company's stock. EPS is also a metric used by most investors to build/raise their investment portfolios and strategies.

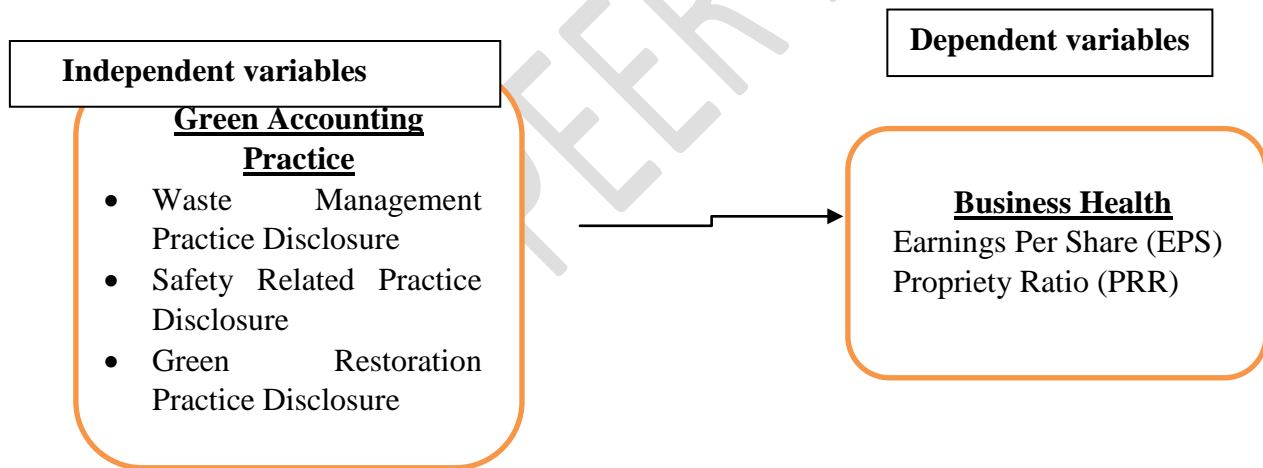
### **2.2.2 Propriety Ratio**

Propriety ratio is also known as equity ratio. According to Asuquo, Dada and Onyeogaziri [3], propriety ratio is the ratio of a company's debt to equity capital. Due to the repayment of principal and debt interest, a large part of the company's cash flow will be reduced. It reveals the proportion of financing from investors and creditors in the manufacturer's financing. It is

believed that it measures the percentage of creditors' funds relative to shareholders' funds [11]. Basically, creditors like this ratio to be lower because the lower the ratio, the higher the level of corporate financing provided by shareholders and the greater the protection margin (buffer) in the event of direct losses or shrinking asset values. Therefore, it measures the amount of financing promised by lenders, suppliers, debtors and creditors to the company and the amount promised by shareholders [23]. It is believed that a higher equity ratio means that more creditor financing (bank loans) is used than investor financing (shareholders). The equity ratio is considered a balance sheet because all elements are reported in the statement of financial position.

### 2.1.3 Conceptual Framework

This reveals the relationship between Green Accounting Practice proxy with waste management, safety related and green restoration practice disclosure and business health of listed oil and gas firms in Nigeria proxied with earnings per share (EPS) and propriety ratio.



#### Figure 1: Conceptual Framework

Figure 1 shows the variables used to proxy green accounting practices and business health of listed oil and gas firms in Nigeria. It gives a quick explanation about the connection between the components of the green accounting practices and business health.

## 2.2 Theoretical Review

### 2.2.1 Agency Theory (Jensen and Mecklin, 1976)

This theory was introduced by Jensen and Mecklin [24]. The basis of their theory was on the separation of powers in corporate organization due to expansion and development. They stated that agency theory is applicable in any situation where a principal-agent relationship exists. They further explained that a principal is a party who has assigned responsibility, authority and commitment to another party to undertake some actions on his behalf. The party who has been assigned authority, and who performs activities on behalf of the principal is known as the agent. In agency theory, there are two groups or segregation in the business environment; the principal and the agent. Jensen and Meckling [24] noted that agency relationship could exist between the firm and the community, where the firm is the agent and the community is the principal; between the manager and the shareholders, where the manager is the agent and the shareholders are the principals; between the employees and the manager, where the employees are the agents and the manager is the principal; between the firm and investors, where the firm is the agent and investors are the principals; between the Government and the firm, where the Government is the principal and the firm is the agent. Thus, agency theory can be applied in the context of an organization, especially those that are quoted in the stock exchange.

One of the core assertions of this theory is that agents assigned to properly represent others should ensure that they undertake their duties in order to maximize the value and interests of those whom they are representing [25]. That is, agents should perform their responsibilities with all enthusiasm and be cautious in undertaking strategic decisions which could influence the worth of the principal and even the organization as a whole. Agency theory believes that the ultimate success or performance of a corporation lies ultimately in the hands of the agents, because they have been assigned responsibilities and given authority to maximize the performance of the company. In addition, this theory is used to give the ideal risk-taking levels, provide the best accounting control steps, actions and behaviors. Agency theory is straightforward in its assumptions and covers a lot of fields in its application, including corporate social responsibility and financial performance. However, it has been laced with some criticisms due to some limitations and inconsistency in its tenets. Firstly, it does not recognize that in some organizations, the owner doubles as the manager, thus there is no separation of power [26]. Another criticism of this theory is that it limits the participants in an organization to only the principal and agent, forgetting that there are some other parties which are influenced by the performance of the firm, but might not necessarily be agent or principal. Another limitation of

this theory is that it presents agents as selfish people who always seek to maximize their own interests rather than the organization.

Despite its critics, agency theory has some notable relevance, even to this study. Firstly, it recognizes the fact that separation of powers can influence a company's financial performance and attitude towards green accounting practices. For instance, a manager might not view green accounting practices the way a shareholder might view it. To expatiate, a manager might see green accounting practices as a compulsory commitment which ought to be fulfilled, while a shareholder might see green accounting practices as a waste of company's resources. Another relevance of this theory is in its cognizance of the agency problem that exists where there is delegation of authority from one person to another, which is usually what happens in green accounting practices.

## **2.3 Empirical Review**

### **2.3.1 Waste Management Practice Disclosure and Business Health**

Ijeoma [6] focused on the impact of environmental cost accounting towards environmental sustainability in Nigeria using ANOVA analysis method. Outcome of the analysis showed that no significant difference exist between organizations in Nigeria regarding being aware of waste management practices. Also, Ahmed, Zakaree and Kolawole [7] reported that waste management practice disclosure had a significant positive impact on earnings per share, and hence profitability of companies. Oraka and Egbumike [8] concluded in their study that waste management practice disclosure had significant effect on total assets turnover and returns on equity. Olayinka and Oluwamayowa [1] focused on corporate environmental disclosure and market value using correlation coefficient. The outcome of the analysis showed that inclusion of waste management practice disclosure enhanced market value of an entity significantly. Abubakar, Moses and Inuwa [27] disclosed that waste management practice disclosure had a positive insignificant relationship with ROA and EPS, and a negative insignificant impact on ROA as well as ROE.

### **2.3.2 Safety Relation Practice Disclosure and Business Health**

Somewhere in north-western Africa, Ramdhony [28] examined the effect of green accounting practices disclosure on the sustainability of oil and gas firms. Among the findings, it was reported that a positive significant relationship exists between safety related practice disclosure and sustainability of oil and gas firms. Contrarily, Ghosh [29] concluded in his study that a

positive but insignificant relationship existed between the components of green accounting practices disclosure (waste management practice, safety relation practice and corporate social responsibility practices disclosure) and the financial performance of firms.

Chandrakantan, Mohd, Lazim, Subramaniam and Zuraida [30], reported that a positive significant relationship existed between safety management practices and the performance of business firms. Nobanee and Ellili [31] disclosed that sustainability disclosures, as well as economic, safety related and social disclosures had no significant effects on the banking performance of UAE banks. Okafor [32] concluded that safety related practices significantly positively affect performance of companies in Nigeria. Also in Nigeria, Oti and Ogar [33] carried out a study on environmental and social disclosure and financial performance. The OLS result revealed that environmental and social disclosure positively affected financial performance.

### **2.3.3 Green Restoration Practice Disclosure and Business Health**

Empirically, limited studies have been carried out on green restoration practice disclosure both locally and internationally. For instance, Aruna and Neenu [5] focused on green disclosure and its impacts on the financial performance of Indian corporate firms. The study used multiple regression analysis method. The outcome of the analysis showed that green restoration practice disclosure had a positive but insignificant effect on the financial performance of firms. In a similar study, Ochotorena [11] examined green restoration practices and stability of business firms in Germany. The study adopted OLS analysis method. Among the findings, it was reported that a positive significant relationship exists between the two variables.

## **3.0 Methodology**

Ex-post facto research design is adopted for this study. This design is appropriate for the study in that the study aimed at obtaining important information on the status of specific phenomenon without any manipulation of the situation. The philosophical approach that was adopted is positivism. Positivism comes up with research questions and hypothesis that can be evaluated and analyzed. Also, the rationale for the positivism research philosophy could be attributed to the fact the green accounting practice disclosure and business healths are common knowledge of the world. Specific research strategy for this study is archival research strategy. This is because this study uses established data set. In-line with the available secondary data and stipulated method

of analysis, this study adopts mono-method. This is because the study is quantitative in nature and uses quantitative data only.

The study adapted the model used by Olayinka and Oluwamayowa [1] which expressed financial performance proxied by return on asset as a function of the adoption of green accounting practice disclosure. The green accounting practice disclosure was captured with waste management practice disclosure, environmental protection practices disclosure and pollution prevention practices disclosure. This is given below:

$$ROA = f(WMPD, EPPD, PPPD) \dots\dots\dots (3.1)$$

Where:

ROA = Return on Asset

WMPD = waste management practice disclosure

EPPD = environmental protection practices disclosure

PPPD = pollution prevention practices disclosure

However, the above model was modified with the replacement of both environmental protection practices disclosure and pollution prevention practices disclosure with safety related practice disclosure and green restoration practice disclosure. Also, the outcome variable, business health was captured with earnings per share and propriety ratio.

The modified model is stated below:

$$EPS = f(WMPD, SRPD, GRPD) \dots\dots\dots (3.2)$$

$$PRR = f(WMPD, SRPD, GRPD) \dots\dots\dots (3.3)$$

Where:

EPS is earnings per share

PRR is propriety ratio

WMPD is waste management practice disclosure

SRPD is safety related practice disclosure

GRPD is green restoration practice disclosure

The econometric equations in logarithms are present below:

$$EPS = \beta_0 + \beta_1 WMPD_{it} + \beta_2 SRPD_{it} + \beta_3 GRPD_{it} + \mu_{it} \dots\dots\dots (3.4)$$

$$PRR = \beta_0 + \beta_1 WMPD_{it} + \beta_2 SRPD_{it} + \beta_3 GRPD_{it} + \mu_{it} \dots\dots\dots (3.5)$$

Where:

L is Log,

$\beta_0$  is the intercept,  $\beta_1 - \dots - \beta_5$  are the slope parameters, subscript "it" represents the combination of time and individuality

$\mu_{it}$  means error term. It is expected that all the predictors would have a positive effect on business health of the listed oil and gas firms in Nigeria.

The data set for this study is mainly secondary data sourced from the published financial reports of the sampled firms and this stems from the interest of the researchers to cover the period of the global financial and economic crises and the period of domestic economic recession that affected every sector of the economy. The data comprises annual time series spanning from 2012 through 2021. The study covered 10 firms out of the 12 listed firms in the oil and gas sector and this was achieved through random sampling technique. The firms are 11 PLC., Forte Oil PLC., Capital Oil PLC., Conoil PLC., Eterna Oil and Gas PLC., Japaul Oil and Maritime Services PLC, MRS Oil Nigeria PLC, OANDO PLC., Seplat Petroleum Development Company PLC., and Total Nigeria PLC.

The data was described using mean, standard deviation, minimum, and maximum values to begin the analysis. Following that, a Pearson correlation matrix was used to demonstrate the link between the study's outcome and predictor factors. The panel data was subjected to a regression analysis that includes pooled Ordinary Least Square (OLS) estimation, fixed effect estimation, and random effect estimation.

#### 4.0 Data Analysis and Results Interpretation

##### 4.1 Descriptive Statistics

**Table 1: Descriptive Statistics**

Variables	Obs	Mean	Standard Deviation	Minimum	Maximum
PRR	100	48.48583	22.16172	0	95.78
EPS	100	2.664367	7.339468	-7.32	57.63
SRPD	100	.9666667	.1798054	0	1
WMPD	100	.2033333	.4031509	0	1
GRPD	100	.06	.2378836	0	1

**Source: Data Analysis, 2022. Where PRR is Propriety Ratio, EPS is Earnings per Share, SRPD is Safety Related Practices Disclosure, WMPD is Waste Management Practices Disclosure, GRPD is Green Restoration Practices Disclosure.**

The balanced dataset spanning ten years and the selected 10 listed oil and gas corporations on the Nigerian Exchange Limited are described in Table 1. The average value for PRR is 48.48583, with minimum and highest values of 0 and 95.78, respectively, according to descriptive data. The average dispersion from the series mean is 22.16172 standard deviation. It implies that the propriety ratios of businesses listed on the Nigerian Exchange Limited have an average difference. EPS has a mean value of 2.664367 and a minimum and highest value of -7.32 and 57.63, respectively. The standard deviation (7.339468) demonstrates that the series mean is widely dispersed. It depicts the large variations in profits per share of selected Nigerian Exchange Limited businesses.

The mean value of SRPD is 0.9666667, with minimum and maximum values of 0 and 1, and a standard deviation of 0.1798054, indicating an averagely broad dispersion from the series mean. Furthermore, the mean value of WMPD is 0.2033333, with 0 and 1 being the minimum and maximum values, respectively. The standard deviation (0.4031509) demonstrates that the series mean is widely dispersed. Finally, the GRPD mean value is 0.06, with 0 and 1 being the lowest and maximum values. It has a standard deviation of 0.2378836, which indicates a large variation from the series mean.

#### 4.1.2 Correlation Analysis

**Table 2: Correlation Matrix**

Var.	PRR	EPS	SRPD	WMPD	GRPD	VIF
PRR	1					
EPS	0.04	1				
SRPD	-0.06	0.27	1			1.10
WMPD	0.13	0.13	-0.02	1		2.37
GRPD	0.13	0.04	-0.14	0.47	1	1.65

**Source: Data Analysis, 2022. Variables are as defined above**

With a correlation value of -0.06, there is a negative association between PRR and SRPD, as seen in table 2. This suggests that the variables changed in distinct directions among the sampled companies across the research period. On the other hand, the results revealed a positive link between PRR, EPS, WMPD, and GRPD, with correlation coefficients of 0.04 for EPS, 0.13 for WMPD, and 0.13 for GRPD. This indicates that the variables moved in comparable directions during the duration of the study. In other words, increasing one variable causes the other to grow. With coefficient values of 0.27, 0.13, and 0.04 for EPS, there is a positive association between EPS, SRPD, WMPD, and GRPD. A negative correlation value of -0.02 for WMPD and -0.14 for GRPD exists between SRPD, WMPD, and GRPD, whereas a positive correlation coefficient of 0.47 exists between WMPD and GRPD. The association between the predictors was favourable, with WMPD and GRPD having the highest correlation value of 0.47. This shows that the likelihood of multicollinearity among our independent or explanatory variables is quite low, as corroborated by the Variance Inflation Factor (VIF)

## **4.2 Regression analysis and Discussion of Findings**

**4.2.1 Model One:** Green Accounting Practices and Propriety ratio of listed oil and gas firms in Nigeria.

**Table 3 Results of Regression Estimate and Diagnostic Tests of Model One: Dependent Variable: PRR**

<i>VARIABLES</i>	(1) <i>OLS</i>	(2) <i>FE</i>	(3) <i>RE</i>	(4) <i>FGLS</i>
SRPD	-3.7 (3.15)	5.51** (2.45)	4.70*** (1.28)	1.88** (0.42)
WMPD	5.04 (2.83)	3.56 (3.88)	3.62 (3.76)	2.86*** (0.103)
GRPD	-0.24 (6.83)	-4.79 (5.39)	-3.25 (5.13)	-2.781 (3.067)
Constant	47.84*** (1.59)	47.33*** (1.17)	47.39*** (3.79)	44.27*** (2.175)
Observations	100	100	100	100
R-squared	0.2925	0.4167	0.509	
Adj. R-Squared	0.2163	0.3590	0.427	
F-Stat	F(5,294) = 16.61 Prob > F = 0.009	F(5,265) = 11.26 Prob > F = 0.006	Wald chi <sup>2</sup> (1) = 4.60 Prob>chi <sup>2</sup> = 0.4673	Wald chi <sup>2</sup> (5) = 33.26 Prob>chi <sup>2</sup> = 0.000
Pesaran CD Test	-	1.738 {0.0822}	-	-
Hausman Test	-	-	Chi2(1) = 4.42 Prob>chi <sup>2</sup> = 0.4905	-
Breusch-Pagan LM Test	-	-	chi <sup>2</sup> (01) = 623.62 Prob>chi <sup>2</sup> = 0.0000	-
Modified Wald Test for Heteroskedasticity	-	chi <sup>2</sup> (30)= 33785.6 Prob>chi <sup>2</sup> = 0.000	-	-
Woodridge Test for Autocorrelation	-	F(1,29) = 54.589 Prob > F= 0.000	-	AR (1) = 0.8334

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Diagnostic Tests**

The Hausman test results conducted to decide on the appropriateness of either fixed or random effects favours random effect as the chi-squares statistic is 4.42 with a probability value of 0.4905, which is greater than 0.05. On the other hand, the Breusch – Pagan LM test with a chi-square statistics of 623.62 and a prob-value of 0.000 makes random effect an inappropriate estimation technique for the model. However, since the Hausman test favours random effect estimation, further tests for cross-sectional independence, heteroskedasticity and serial/autocorrelation become necessary. The result of the Pesaran CD test reveals 1.738 with a prob-value of 0.0822 indicating the absence of cross-sectional dependence. The null hypothesis is rejected as a result of the significant result of the Modified Wald test for heteroskedasticity with a probability value of 0.00 and the Wooldridge test for autocorrelation in panel data with a probability value of 0.000. Thus, the Feasible Generalized Least Squares, FGLS that corrects for heteroskedasticity and autocorrelation is considered appropriate for our hypothesis testing and result interpretation.

#### **Régression Estimâtes Interprétation**

Based on the FGLS results, SRPD and WMPD have a positive and significant effect on the propriety ratio of listed oil and gas firms in Nigeria. On the contrary, GRPD has a negative and insignificant effect on the propriety ratio of listed oil and gas firms in Nigeria

**4.2.2 Model Two:** Green Accounting Practices and Earnings per Share of listed oil and gas firms in Nigeria.

**Table 4 Results of Regression Estimate and Diagnostic Tests of Hypothesis Four: Dependent Variable: EPS**

<i>VARIABLES</i>	<i>(1) OLS</i>	<i>(2) FE</i>	<i>(3) RE</i>	<i>(4) FGLS</i>
SRPD	4.146176*** (.00723)	-0.0304966 (0.896519)	0.3285822 (0.8653911)	-0.0749074 (0.2467766)
WMPD	1.410795 (1.544963)	-0.302566** (0.121618)	-0.2219413 (1.129434)	-0.0155705 (0.3423781)
GRPD	-1.80903 (2.185423)	-0.8186775 (1.61566)	-1.000832 (1.544606)	-0.5270926*** (0.1664549)
Constant	1.196784 (0.3096799)	2.282304*** (0.3515868)	2.183553** (1.241114)	0.4768846*** (0.1498718)
Observations	100	100	100	100
R-squared	0.1063	0.5462	0.5578	
Adj. R-Squared	0.0911	0.4427	0.4575	
F-Stat	F(5,294) = 6.99 Prob > F = 0.000	F(5,265) = 13.33 Prob > F = 0.0061	Wald chi <sup>2</sup> (5) = 18.20 Prob>chi <sup>2</sup> = 0.0027	Wald chi <sup>2</sup> (5) = 5.10 Prob>chi <sup>2</sup> = 0.0038
Pesaran CD Test	-	1.7377 {0.366}	-	-
Hausman Test	-	-	Chi2(1) = 2.75 Prob>chi <sup>2</sup> = 0.7383	-
Breusch-Pagan LM Test	-	-	chi <sup>2</sup> (01) = 4705.35 Prob>chi <sup>2</sup> = 0.0000	-
Modified Wald Test for Heteroskedasticity	-	chi <sup>2</sup> (30) = 1.8e+06 Prob>chi <sup>2</sup> = 0.000	-	-
Woodridge Test for Autocorrelation	-	F(1,29) = 21.096 Prob > F = 0.0001	-	AR (1) = 0.8412

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Diagnostic Tests**

Deciding on the appropriate estimation technique employed for this hypothesis, the Hausman test conducted favours the random effect as a result of insignificant effect of the Hausman test result. The chi-square statistic for the Hausman test is 2.75 with a probability value of 0.7383, which is greater than 5% significant level. The Pesaran CD test with a pro-value of 0.366 indicates evidence of non-cross-sectional dependence while the Modified Wald Test for Heteroskedasticity shows that the variance of the error terms is not constant over time, that is, absence of homoskedasticity. Wooldridge test for autocorrelation equally indicates evidence of

violation with a prob-value of 0.0001. Consequently, the Feasible Generalized Least Squares (FGLS) is considered appropriate to remove the violations of the OLS assumptions and for interpretation of the fourth hypothesis.

### Regression Estimate Interpretation

The outcome of the FGLS analysis showed that SRPS, WMPD and GRPD have a negative effect on EPS. The negative effect is significant for GRPD and insignificant for SRPS and WMPD.

### 4.4 Validation of Hypotheses

**Table 5 : Validation of Hypotheses**

S/N	Models	Hypothesis	P-value	Remark
1	PRR	SRPD and PRR	0.037	Reject
		WMPD and PRR	0.009	Reject
		GRPD and PRR	0.356	Accept
2	EPS	SRPD and EPS	0.761	Accept
		WMPD and EPS	0.964	Accept
		GRPD and EPS	0.000	Reject

Source: Researcher's Computation, 2022.

### 4.5 Implication of Findings

The implication of findings of this study are as follows:

- i. Management of companies listed in Nigeria, appreciates the significant influence of green accounting practice in making accurate decision on factors that could affect the health of the business either positively or negatively. This in turn assist them in making informed decision as to how to maintain sustainable and stable health, placing value on the overall wellbeing of the business.
- ii. The shareholders on the other hand have access to ample opportunities to understand the aspects of green accounting practice that affects the health of the business in which they have a stake and in turn, assist them in making informed decision about their investment. With the acquired knowledge, the shareholders could match the appropriate green accounting practice with the key business health indicator and also know the right disclosure that influences business health.

### 4.6 Discussion of Findings

The discussion of findings is based on the Feasible generalized least squares (FGLS) result. It was discovered that safety related practices disclosure had a positive and significant effect on business health of listed oil and gas firms in Nigeria captured with propriety ratio to the tune of 1.88( $p=0.037<0.05$ ). The inference of this outcome is that business health in terms of propriety ratio of listed oil and gas firms in Nigeria would increase by 1.88% with just a 1% increase in safety related practices disclosure.

Theoretically, this discovery upholds the tenets of stakeholder's theory that if the firm strive to report on their green activities, they would ultimately achieve optimal business health. Stakeholders' theory also outlines the beneficiaries of green accounting practices of the company, explaining that stakeholders of the company are not limited to the shareholders/owners of the company, but stretches to the people that influence the business health of the company, or are influenced by the business health of the company. This outcome corroborates the findings of Osamor and Adebajo [34] and Polycarp [35]. They reported that safety related practices had a positive effect on financial performance of firms. However, it does not support the discoveries of Okechukwu and Onyia [36] that safety related practice had a negative effect on firm's performance.

Also, it was discovered that safety related practices disclosure had a negative insignificant effect on earnings per share of listed oil and gas firms in Nigeria to the tune of -0.0749074 ( $p=0.761>0.05$ ). This implies that a 1% increase in Safety related practices disclosure would engender a 0.07% decrease in earnings per share. This effect can be explained by the fact that inability of the management to make the right choice among risky alternatives. Empirically, the outcome gave credence to the finding of Iliemena [37]. He found that safety related practices disclosure had an adverse effect on firm's sustainability

The effect of waste management practices disclosure showed that it had a positive significant effect on propriety ratio to the tune of 0.3396( $p=0.009<0.05$ ). The corollary of this discovery is that when companies disclose their waste management practices to their stakeholders, there is tendency for their propriety ratio to increase at a significant level. The knowledge of existence of recycling firms, separation of waste and disposal of waste from recycling site, initiatives to increase separate collection of hazardous wastes, declaration of waste for disposal in landfills in a company calls for more investment opportunities, thereby enhance the equity level of the firms.

This outcome corroborates with the findings of Ebaid [38] that a positive relationship existed between waste management practices disclosure and firms' stability.

Consequently, it was discovered that waste management practices disclosure had a negative and insignificant effect on earnings per share to the tune of  $-0.0155705$  ( $p=0.964 > 0.05$ ). This outcome is against the expected positive effect and by implication, it connotes that with just a 1% increase in waste management practices disclosure, earnings per share will reduce by 0.02%. The inference of this discovery is that waste management practices disclosure has no potency to significantly influence earnings per share of listed oil and gas firms in Nigeria. It is negative, probably because avoidance or ineffective waste reduction or waste avoidance tend to maximize cost in the organization, thereby resulting to low performance and sustainability. Empirically, this outcome affirmed the findings of Egbunike and Okoro [39] and Odo, Igberu and Anoke [40]. They reported a negative impact of green accounting components on firms' profitability.

Finally, it was revealed that green restoration practices disclosure had a negative effect on propriety ratio and earnings per share. However, the negative effect is significant for earnings per share to the tune of  $-0.5270926$  ( $p=0.000 < 0.05$ ) against the insignificant effect on propriety ratio with the coefficient and probability value of  $-2.781$  ( $p=0.356 > 0.05$ ). By implication, this means that earnings per share and propriety ratio would reduce by 0.53% and 2.78%, when green accounting practices in terms of green restoration practices disclosure increase by 1%. This outcome was in agreement with the findings of Polycarp [35]. He reported that a significant relationship existed between green restoration practices and business performance.

## **5.1 Conclusion**

Limited studies have been carried out in the area of green accounting practices of firms both locally and internationally. However, none of the studies was available at the disposal of the research focused on the listed oil and gas firms in Nigeria and covered waste management practice disclosure, safety-related practice disclosure and green restoration practice disclosure as a component of green accounting practices disclosure. Due to this gap, this study established, to close up the differences. In lieu of this, it unveiled the effect of green accounting practices (waste management practice disclosure, safety-related practice disclosure and green restoration practice disclosure) on the business health of listed oil and gas firms in Nigeria (2012-2021). Through the

findings which were carried out in the study, it was concluded that green accounting practices have the capacity to influence the business health of listed oil and gas firms in Nigeria.

## **5.2 Contribution to studies**

Despite the enormous interest shown in various aspects of green accounting practice by academics, few studies have been conducted in the oil and gas sector, particularly in Nigeria. Thus, this study contributes to literature by focusing on the listed oil and gas firms in Nigeria. By expectation, this study is not only of great significance to the management of organizations, particularly oil and gas sector, but also serve as a significant instrument to the regulatory authorities, stakeholders and prospective investors, local community, organizations that are yet to adopt sustainability practice and academicians at large.

As a result of the dynamic functions of green accounting practices to enhance the maximization of the financial performance of firms, the management of every organization would be exposed to the unhidden progress of green accounting practices. Thereby, this study served as a guide for management to determine sustainability guidelines and standards in the long-run. Also, this study served as an eye-opener to management on how green accounting practices stimulate a rise in the strategic goals of firms, Creating an industrious relationship with the immediate environment of an organization plays a significant role in its success in the highly competitive business world. Thus, the management tends to ensure a productive relationship with the business's immediate environment through its green accounting practices which would be highlighted in this study.

## **5.3 Recommendations**

The following recommendations are considered relevant in line with the findings made:

- i. Management of firms in the oil and gas sector should incur more cost on safety-related practices as this would yield higher returns to the firm. Also, the right choice should be made by the management among risky alternatives towards ensuring the safety of employees.
- ii. Given the significant relationship that exists between waste management practices disclosure and business health, the management of the listed oil and gas firms should

channel effort into promoting the effective and efficient utilization of waste and its disclosure as a way of increasing stakeholders' trust and minimizing the cost of production to maximize financial health stability.

- iii. Furthermore, the management should ensure compliance with green rules and regulations guiding the practices of environmental accounting to ensure a well-performing, stable and sustainable health.

UNDER PEER REVIEW

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