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# Renewable and Non-Renewable Material Usage and Financial Performance of Listed Industrial Goods Firms in Nigeria


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**ABSTRACT:** This study examines the effect of renewable and non-renewable material usage on the financial performance of industrial goods firms in Nigeria. Renewable and now-renewable materials usage included energy consumption while firms' financial performance was measured by return on assets (ROA), return on equity (ROE) and earnings per share (EPS). Data were sourced from the annual reports and sustainability reports of the selected industrial goods firms for periods of 2011 to 2020. Data for renewable and non-renewable material usage (RNMU) were obtained through a content analysis approach while data for ROA and ROE were computed with the accounting figures derived from the firms' annual reports. Panel Regression analysis was employed in analyzing the data collected. Results from the analysis revealed that RNMU exerted negative but insignificant effect on ROA, ROE and EPS. The implication of the findings is that the level of environmental information practices and disclosures of industrial goods firms in Nigeria, in terms of renewable and non-renewable materials usage is poor; and has not significantly supported the firms' performance. The study recommends among other things that corporate firms in general and industrial good firms in particular should take the issue of environmental information disclosures serious, so as to enhance the confidence of the public on the operations of the firms, which will consequently translate to better performance of the firms; and that the legislative arm of the government should tighten the legislation on environmental information disclosures of corporate entities in Nigeria by making it compulsory with specific indices.



**KEYWORDS:** Renewable and Non-Renewable, Material Usage, Information Disclosures, Content Analysis, Industrial Good Firms.


## 1. INTRODUCTION

Environmental accounting is an aspect of accounting that generates reports for both internal and external use; it has become the concern and focus of corporate bodies to utilize environmental information in making a management decision. Environmental issues such as pollution, deforestation habitat for endangered and threatened species affects everyone, but most developing countries (Kayode, 2011). Companies are expected to prepare an annual report which shows both qualitative information about their operations and performance to be presented to their shareholders and stakeholders. The information content requirement by stakeholders helps in disclosing information about organizational performance and report on environmental accounting.

Climate change and Global warming is an environmental challenge in the face of the world. This challenge is mostly caused by companies operations. Emission from companies operation is a major source of global warming and climate change (Mishra and Siddiqui 2014). In fighting these challenge companies do incur cost for environmental management. Therefore, the need for companies to account for environmental expenditure received great attention years ago. According to environmental accounting guidelines (2012), environmental accounting aims at achieving sustainable development, maintaining favourable relationship with community, and pursuing effective and efficient environmental conservation activities.

Firm performance which is often used in business as organizational performance, measures how efficient and effective a company is, in its dealings. In accounting firm performance is used as financial performance, which measure profitability of companies in terms of return on assets, return on investment and return on equity (Ahmad, Simon & Mohammad, 2017). It also measure market value which include earning per share. Firm's can best interact with its stakeholders through disclosing environmental information. This helps companies to appear good citizens in the eyes of their stakeholders (Igbekoyi, Ogungbade & Olaleye, 2021). Corporate performance has also been linked to environmental information disclosure (Oluwagbemiga, 2014).

Firms make environmental information disclosure for capital market purposes, as indicated by stock returns, (Deegan, 2010; Velashani and Mehdi, 2008).

Studies have also been conducted on environmental information disclosure in Nigeria such as Oluwagbemiga (2014), Avwokeni (2016), Edogiawerie and David (2016) on the relationship between environmental information disclosure and corporate performance in Nigeria. These studies however present mixed findings on the subject of inconclusive results (Musyoka, 2017; Crawford, Lont, & Scott, 2014). In developed markets like the U.S. or U.K., additional disclosure may have an incremental effect (Almeida & Rodrigues, 2016). However, this may not be the case in a developing country, such as Nigeria, with a different legal, institutional and accounting environment (Djatej, Gao, Sarikas, & Senteney, 2009). This was supported in a recent study, when Modugu and Eboigbe (2017) established that the level of environmental information disclosure was still low despite the mandatory adoption of IFRS in the country.

However, while prior studies on environmental accounting have mainly focused on the drivers of renewable and non-renewable material usage or the disclosure practices of listed industrial goods firms, with much emphasis on companies within the manufacturing or industrial goods sectors (Jo & Harjoto 2012; Ofoegbu 2013, Rabi 2019), much effort have not been tailored at unveiling the bi-directional between renewable and non-renewable material usage among firms and measures of corporate performance of firms. This situation ignited the interest of this current study which has been designed to ascertain the link between renewable and non-renewable material disclosure and performance measures of listed industrial goods firms in Nigeria. The main objective of this study is to examine the effect of renewable and non-renewable material usage and financial performance of listed industrial goods firms in Nigeria.

Thus, this study hypothesized as follows; first that **r**enewable and non-renewable material usage has no significant effect on return on assets (ROA); second, renewable and non-renewable material usage does not significantly affect earnings per share (EPS) and third, there is no significant relationship between renewable and non-renewable material usage and return on equity (ROE).

## 2. LITERATURE REVIEW

Conceptually, according to the National Forage and Grass Land Curriculum (NFGC) (2021), there are many types of resources that go into producing food and producing forages. In particularly, they are grouped into renewable resources and non-renewable resources. Renewable resources can be replaced over time through natural processes. The renewal process may be relatively quick, as with sunshine which comes on a daily basis. Or, the renewal process may be very slow, as in the formation of soil which may take long time. On the other hand, non-renewable resources are resources whose stock or reserves is limited or fixed. The available supply of non-renewable resources may be replenished through recycling (e.g. recycling aluminium cans), but the overall supply remains relatively fixed.

Theoretically, this study adopted Legitimacy Theory in examines the effect of renewable and non-renewable material usage on the financial performance of industrial goods firms in Nigeria. The theory proposition is that companies exist and operate within the society. Thus, immediate environment where organisations operate is important in order to incorporate societal needs into their day to day activities. The essence of this is because an organisation relies on the environment to guarantee access to their natural resources. In order to acquire the resources needed for their production, organisations must constantly interact with their environment. This is to suggest that the performance and survival of an organisation to large extent dependent on the support it receives from its environment where she operate.

The idea behind corporate social and environmental reporting behaviour is to gain legitimacy or societal acceptance (Tilling & Tilt, 2010). This to say that organisational legitimacy takes its root from social contract. Social contract exists between the organization and its host communities. Organizations operate in a society through a social contract where its survival and growth. Going forward, a threat to the legitimacy of an organization occurs when societal expectations of its behaviour differ from actual behaviour. The situation often results to unpleasant situation, the society could revoke the organizations contract to continue its operations which could affect the future existence of the company. According to Deegan (2002) it is the society that confers upon an organization the state of legitimacy since such companies do not have inherent right to resources. In essence, for organization legitimacy to remain intact, it must ensure that both renewable and non-renewable material assessed from the environment where it operates must be properly utilize and then the organization performance can be positively achieved.

Empirically, there are several related studies on firm performance as it related to the environment they operate. For instance; Innocent and Okafor (2018) adopted ex-post facto research design methodology to examine the effect of firm size, profitability and firm age on waste management cost of the industrial goods firms. Secondary data were sourced from annual reports and accounts of the various firms understudy between the period of 2008 and 2017. Pearson correlation coefficient and Multivariate

regression analysis was carried out to analysed the data sourced. Findings of the study revealed that firm attributes (firm size, profitability and firm age) have a significant and positive effect on environmental performance (measured by waste management cost) at5% significant level.

Abubakar, Moses and Inuwa (2017) investigate the influence of firm attributes on environmental disclosure of listed breweries companies in Nigeria. The study sourced secondary data from annual reports of some selected companies listed on the stock exchange, the data covered the period of five years spanning from 2012 to 2016. The analysis technique is based on multiple regression technique. Findings of the study showed that board size has negative and significant influence on environmental disclosure also; leverage has negative and insignificant influence on environmental disclosure. More so, firm size has positive insignificant influence on environmental disclosure, and, lastly, profitability has positive significant influence on environmental disclosure of listed breweries companies in Nigeria.

Khalid, Kouhy and Hassan (2017) examine the effect of corporate characteristics on the amount of Corporate Social and Environmental Disclosure (CSED) in the manufacturing sector in Jordan. The study drawing from Ernst and Ernst methodology developed a disclosure index to measure the amount of CSED for three years between the period of 2010 and 2012. Using panel data regression the results of the model indicated that the firm size, type of audit firm and financial performance in Amman Stock Exchange (ASE) are significantly affect the amount of CSED whereas, firm profitability, age, type of industry and ownership are not related to the practices of CSED.

Elshabasy (2018) study selected the top most 50 active firms in the Egyptian stock exchange by examine the impact of corporate characteristics on environmental information disclosure. The study analysis is based on the financial statements from the disclosure book for the period 2007-2011. Findings found that there is an insignificant relationship between two factors of firms' characteristics (Firm Size and Firm Financial Leverage) and EID, while Firm's age showed a negative significant relationship with EID and finally Firm's Profitability showed a positive significant relationship with EID.

Egbunike and Tarilaye (2017) examine the nexus between firm's specific attributes proxy by firm size, earnings, leverage and governance and voluntary environmental disclosure on some listed manufacturing companies in Nigeria. Data of firm size, earnings, leverage and governance were obtained from the annual reports and accounts of some selected manufacturing companies during 2011-2015. Descriptive and inferential statistics were used to analyse data used. The result of the study revealed that some of the studied manufacturing companies have high leverage profile while some with low leverage profile. In addition, some companies' environmental items were not disclosed in their annual reports and accounts while some were disclosed and described in monetary terms. Furthermore, study revealed that there is a positive relationship between environmental disclosure, firm size, leverage, earnings per share and governance of the studied manufacturing companies.

Osazuwa, Ahmad and Adam (2016) provide a description of the length Nigerian companies disclose environmental information. The study employed descriptive research design using content analysis. Unbalanced panel data 142 sampled companies for a five year period between 2009 and 2013 were used in the study. The study found that the length of disclosure of environmental information is approximately three sentences per company which is very low, especially in comparison with other developed and developing countries. It was also found that following the events that led to the revision of the code of corporate governance that occurred in 2011, there was a steady increase in the quantity disclosed over time.

Ohidoa, Omekhodu and Oserogho (2016) examined the determinants of environmental disclosure in Nigeria. Historical data were obtained from the financial statements and account of firms in the manufacturing and financial sectors listed in the Nigeria Stock Exchange. The statistical instrument employed in the study, is the Binary logistic panel data regression. The study findings revealed that industry type, firm size has positive relationship, while leverage has no significant effect on environmental disclosure.

Majeed, Aziz and Saleem (2015) investigate the factors affecting the level of disclosure of information about environmental and social responsibility of listed firms in Pakistan. The study was conducted with a sample of 49 firms with annual reports from 2007 to 2011. The study results indicated that there is a positive and statistically significant impact of the size of the board, level of board independence, the degree of decentralization and the size of the business on the level of disclosure corporate social and environmental responsibility. More so, results showed that there is reverse relationship between the representatives by genders and the disclosure level of environmental information.

Umoren, Udo, and George, (2015) used a sample of 40 companies across eight sectors in Nigeria with time series data between 2013 and 2014, presented evidence that the level of environmental information reported by sample companies listed on Nigeria Stock Exchange was 7%. The study used descriptive statistics, correlation, and linear regression. Ahmad, and Osazuwa, (2015) investigate the effect of director's culture on the level of environmental disclosures among companies quoted on the main stream of the Bursa in Malaysia. The study uses the ethnic background of the directors to categorize the culture of the board.

The dependent variable environmental disclosure in the annual report of the selected companies was measured by an index score based on the content. The result indicate a significant relationship between environmental disclosure and boards dominated by Bumiputra directors, board dominated by foreign directors, firm size and leverage.

Hasan and Hosain (2015) asses the factors that influence the level of mandatory and voluntary disclosure of environmental and social of firms listed on the Dhaka stock exchange. The study data was collected from 54 corporate annual reports for the period from 2010 to 2013 listed firms. The study used multivariate regression analysis The results showed that the firm size significantly and positively affects the level of information voluntary disclosure. Age factor remarkably influences the level of compulsory disclosure. The study also showed that firm size and profit do not affect mandatory disclosure.

## 3. METHODOLOGY

This study employed longitudinal research design. It is most suitable for studies where information is collected from different sections (firms) over different periods of time (that is, cross-sectional versus time-series data). The description of longitudinal research design agrees with the approach of the study, hence the adoption of this research design as the methodological approach of the study. The population of this study comprises of all the 23 Industrial Goods Firms listed on the floor of the Nigerian stock exchange as at 31st December, 2021. Thereafter, purposive sampling technique were adopted to selected the respondents

### Model Specification

The model 1 functional relationship of this model specification is as follows;

ROA = F(RNMU, FZTA)

In explicit simple regression form is as follows:

$ROA = \beta_0 + \beta_1 RNMU + \beta_2 FZTA + e$

In logged form

$LogROA = \beta_0 + \beta_1 LogRNMU + \beta_2 Log\ FZTA + e$

The model 2 functional relationship of this model specification is as follows;

ROE = F(RNMU, FZTA)

In explicit simple regression form is as follows:

$ROE = \beta_0 + \beta_1 RNMU + \beta_2 FZTA + e$

In logged form

$LogROE = \beta_0 + \beta_1 LogRNMU + \beta_1 Log\ FZTA + e$

The model 3 functional relationship of this model specification is as follows;

EPS = F(RNMU, FZTA)

In explicit simple regression form is as follows:

$EPS = \beta_0 + \beta_1 RNMU + \beta_2 FZTA + e$

In logged form

$LogEPS = \beta_0 + \beta_1 LogRNMU + \beta_1 Log\ FZTA + e$

ROA = for Return on Assets;

ROE = for Return on Equity

EPS = Earnings Per Share;

RNMU stands for Renewable/Non-renewable Material Usage and error term

FZTA represents firm size

## 4. DATA ANALYSIS AND RESULTS PRESENTATION

This section present the panel least squares result and discussion of the various models specified in section three of this study. For model 1 specified earlier the results is presented in table 1 as follows;

**Table 1. Effect of Renewable and Non-Renewable Material Usage on Return on Assets**

Dependent Variable: LOGROA
Method: Panel Least Squares
Periods included: 10
Cross-sections included: 5

Total panel (balanced) observations: 50

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.912355 | 0.930917 | 2.054270 | 0.0461 |
| RNMU | -0.012030 | 0.013888 | -0.866241 | 0.3912 |
| FZTA__LOG | -0.092537 | 0.160055 | -0.578158 | 0.5662 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.624760 | Mean dependent var | 1.312249 |
| Adjusted R-squared | 0.516587 | S.D. dependent var | 0.095116 |
| S.E. of regression | 0.089400 | Akaike info criterion | -1.862217 |
| Sum squared resid | 0.343671 | Schwarz criterion | -1.594534 |
| Log likelihood | 53.55543 | Hannan-Quinn criter. | -1.760282 |
| F-statistic | 2.077787 | Durbin-Watson stat | 2.155696 |
| Prob(F-statistic) | 0.075749 | | |

**Source:** E-View 8.0 Statistical Output, 2022.

This result reveals that the coefficient of the LogRNMU is about -0.01; this indicates a negative effect of RNMU on ROA while the p-value of the t-statistics is 0.39 which is far greater than the significance level of 0.05. This result indicates that RNMU has no significant effect on ROA of the selected industrial goods firms in Nigeria. With this result therefore, the null hypothesis which states that renewable and non-renewable material usage has no significant effect on return on assets (ROA) is accepted to be true while the associated alternative hypothesis that a significant effect exists is rejected. For the model 2 specified earlier the results is presented in table 2 as follows;

**Table 2. Relationship between Renewable and Non-Renewable Material Usage and Return on Equity**

Dependent Variable: LOG_ROE
Method: Panel Least Squares
Sample: 2011 2020
Periods included: 10
Cross-sections included: 5
Total panel (balanced) observations: 50

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 3.040443 | 0.837168 | 3.631818 | 0.0007 |
| LOG_RNMU | -0.029441 | 0.089521 | -0.328869 | 0.7439 |
| FZTA__LOG | -0.253122 | 0.143985 | -1.757971 | 0.0859 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.781516 | Mean dependent var | 1.491000 |
| Adjusted R-squared | 0.695216 | S.D. dependent var | 0.095773 |
| S.E. of regression | 0.080403 | Akaike info criterion | -2.074361 |
| Sum squared resid | 0.277978 | Schwarz criterion | -1.806677 |
| Log likelihood | 58.85902 | Hannan-Quinn criter. | -1.972425 |

| | | | |
|---|---|---|---|
| F-statistic | 4.420807 | Durbin-Watson stat | 2.076337 |
| Prob(F-statistic) | 0.001449 | | |

**Source:** E-View 8.0 Statistical Output, 2022.

This result reveals that the coefficient of the LogRNMU is approximately -0.03 which indicates a negative relationship between RNMU and ROE; however, the p-value of the test statistics is 0.74 which is greater than the significance level of 0.05. These results suggest that RNMU has an insignificant negative relationship with ROE. Therefore, the null hypothesis which states there is no significant relationship between renewable and non-renewable material usage and return on equity (ROE) is accepted while the associated alternative hypothesis is rejected.

For the model 3 specified earlier the results is presented in table 3 as follows;

**Table 3. Effect of Renewable and Non-Renewable Material Usage on Earnings per Share**

Dependent Variable: LOG_EPS

Method: Panel Least Squares

Sample: 2011 2020

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -2.259535 | 0.900425 | -2.509409 | 0.0159 |
| LOG_RNMU | -0.079681 | 0.096285 | -0.827554 | 0.4125 |
| FZTA__LOG | 0.897082 | 0.154865 | 5.792688 | 0.0000 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.786678 | Mean dependent var | 3.149000 |
| Adjusted R-squared | 0.756912 | S.D. dependent var | 0.175398 |
| S.E. of regression | 0.086478 | Akaike info criterion | -1.928677 |
| Sum squared resid | 0.321573 | Schwarz criterion | -1.660994 |
| Log likelihood | 55.21693 | Hannan-Quinn criter. | -1.826742 |
| F-statistic | 26.42881 | Durbin-Watson stat | 2.197219 |
| Prob(F-statistic) | 0.000000 | | |

**Source:** E-View 8.0 Statistical Output, 2022.

This result reveals that the coefficient of the LogRNMU 3 approximately is -0.08; which also indicates a negative effect of RNMU on EPS. However, with the p-value of 0.41 which is greater than the significance level of 0.05. Therefore, the null hypothesis, which states renewable and non-renewable material usage does not significantly affect earnings per share (EPS) is accepted.

## 5. CONCLUSION AND RECOMMENDATION

This study examines the effect of renewable and non-renewable material usage and financial performance of listed industrial goods firms in Nigeria. This study employed longitudinal research design. The population of this study comprises of all the 23 Industrial Goods Firms listed on the floor of the Nigerian stock exchange as at 31st December, 2021. Three hypotheses were formulated and tested with panel least square method. Findings of the study revealed that the entire dependent variables namely, return on assets (ROA); return on equity (ROE) and earnings per share (EPS) have statistically insignificant effect at 0.05 level of significant on explanatory variable (Renewable/Non-renewable Material Usage (RNMU).

On the basis of the findings, the study concludes that the environmental management information disclosures in terms of renewable and non-renewable materials usage as practiced by industrial goods firms in Nigeria today has not significantly affected their financial performance during the period under review. It is therefore affirmed by this study that environmental sustainability practices and the disclosures of environmental management information by firms in the industrial goods sector are reasonably poor; as such, renewable and non-renewable material usages of the firms are not adequately reported or disclosed; this has shown the tendency of decreasing the financial performance of the firms. Most firms in Nigeria generally and industrial goods firms in particular have not been environmentally responsive; hence, the huge environmental concern in our contemporary world today cannot be unconnected to the activities of industrial goods firms and other manufacturing and explorative industries.

Therefore, this study hereby recommends as follows: that corporate firms in general and industrial good firms in particular should take the issue of environmental management information disclosures serious, so as to enhance the confidence of the public on the operations of the firms, which will consequently translate to better performance of the firms.

The legislative arm of the government should tighten the legislation on environmental information disclosures of corporate entities in Nigeria by making it compulsory with specific indices.

The ministry of environment and other environmental regulatory agencies in Nigeria should strengthen their monitoring and oversight function on the compliance level of corporate entities towards environmental frameworks.

Stiffer penalties should be meted out to corporate entities that violate environmental sustainability measures spelt out for corporate firms.

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