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## Effects of Environmental/Natural Capital Reporting on Profitability of Manufacturing Firms in Nigeria

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**ABSTRACT:** Reporting environmental/natural capital and its effect on corporate profitability is a contemporary global corporate reporting issue following emphasis on green economy and reporting framework. This study was carried out to investigate the effect of environmental/natural capital reporting on profitability of manufacturing companies in Nigeria. Twenty three (23) firms engaged in industrial and natural resources processing were selected for the study. Ex-post facto research design was adopted in the study involving generation of data from the annual reports of these firms using content analysis checklist. The study period was from 2009 to 2018. The environmental/natural capital index (scores) were generated using 7 items in line with International Initiative on Integrated Reporting Council (IIRC). Data obtained were analysed using descriptive and simple linear regression of the ordinary least squares (OLS) technique. The profitability of manufacturing firms was proxy by Return on Assets (ROA). Results revealed environmental/natural capital reporting (ER) have significant negative effect on ROA; most of the studied companies have not engaged in the reporting of environmental/natural capital with an average reporting index of less than 5%. The regression coefficient were ( $\beta = 0.168$ ,  $SE = 0.598$ ,  $t\text{-cal} = -2.222$ ,  $p\text{-value} = 0.027$ ,  $p < 0.05$ ). It was concluded and recommended in line with global best practices, regulatory agencies in Nigeria issue reporting standards that would make reporting of all sustainable capital items and particularly environment/natural capital mandatory.

**KEYWORDS:** Return on Assets (ROA), Environmental/Natural capital, Sustainable Reporting.

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### 1.0 INTRODUCTION

The emergence of integrated reporting approach for business exposes the short-coming of the traditional reporting framework which consider more the financial or economic than sustainable perspectives. The traditional financial reporting system is seen as narrow and one-sided as it does not guarantee corporate sustainability nor reflect true performance. Turker and Sayer (2014) stressed that financial reporting forces on a portion of the company's position and is unable to disclose the effects of environmental factors, social factors and other sustainable issues. In addition, it is unable to show quantitative information in relations to the risks and opportunities within the environment, or improve entity image and appraise the performance of the company in line with the regulations and customs of the society.

Recently, companies in developed countries are less interested in reporting only financials as many companies are providing stakeholders with diverse reporting approaches which are integrated in approaches such as Environmental, Social and Governance (ESG) disclosures, sustainability reporting among others (Suttipun, 2017). Suttipun (2017) disclosed that all the aforementioned reporting frameworks are still voluntary in many countries and without generalized frameworks; as such, giving companies an avenue to only report positive information to the stakeholders.

Sequel to the drawbacks of the conventional financial reporting frameworks, International Integrated Reporting Council (IIRC) published sustainability reporting index in 2013 for disclosing various sustainable Capitals – natural/environmental, social and relationships, human and intellectual.

Morros (2016) stressed that organizations disclose to diverse interest groups who might not only be interested in where, why and how corporate entities create value and the strategy companies employ to carry out sustainable capital reporting.

Today, many countries are mandatorily practicing integrated reporting (IR). Although Nigeria is yet to make IR, a mandatory practice, the Nigerian Stock Exchange (NSE), Central Bank of Nigeria (CBN) as well as Financial Reporting Council of Nigeria (FRCN) have made it clear for firms to produce sustainable capital reporting along with their year-end corporate reports and accounts (Okwuosa and Amaeshi, 2017).

How manufacturing companies in Nigeria have complied to the directive, requires an empirical evidence. Global Reporting Initiative (GRI) (2013) explained sustainable capital reporting to be three recognition, measurement, presentation and disclosure of various operate capitals and their performance towards achievement of sustainable resources development (Etim and Idorenyin, 2021).

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Some studies on sustainability report conducted in the United States of America (USA), Australia, New Zealand, India, South Africa, and many of the European countries have pointed out that sustainable capital (environmental/natural, social, human and intellectual) accounting and reporting is an important ingredient of corporate success and that it can contribute more to firm's performance. Researchers have also observed that, environmental/natural capital reporting improves pricing and profitability, assist managers in targeting cost reduction, reduces wastes and improves eco-efficiency. These requires empirical proof for Nigerian companies in general and the manufacturing sector in particular. This study is in furtherance of investigating the linkage between environmental/natural capital reporting and profitability of manufacturing companies quoted in the Nigerian Stock Exchange (NSE) between the financial years 2009 and 2019 for twenty three (23) firms.

### 1.2 Objective of the Study

The objective of this study is to examine the effect of environmental/natural capital reporting on profitability of the listed manufacturing firms in Nigeria.

### 1.3 Research Questions

For the objective of the study to be achieved, the research question raise is stated as: what is the effect of environmental/natural capital reporting on profitability of the listed manufacturing firms in Nigeria?

### 1.4 Research Hypothesis of the Study

The hypothesis of the study stated in the null form is:

**Ho:** Environmental/Natural capital reporting has no significant effect on profitability of the listed manufacturing firms in Nigeria.

### 1.5 Significance of the Study

The research would be of assistance to the management of manufacturing firms in Nigeria, and elsewhere, and specifically, industrial goods and natural resources process sub-sectors of the economy by highlighting the need to ensure quality sustainable environmental/natural capital reporting in the annual reports and as a would-be benchmark to these firms. The study would unveil an important aspect of organizational resource-environmental/natural capital; a very important sustainable enabler for corporate entities. It would also add to existing literature in financial reporting and accounting, and management performance indicators such as Critical Success Factors (CSFs), Key Performance Indicators (KPIs), and the likes.

## 2.0 REVIEW OF RELATED LITERATURE

The review of related literature is carried out in three sub-sections – conceptual review, theoretical review and review of empirical studies.

### 2.1 Conceptual Review and Issues

Issues relating to environmental/natural capital have of recent attracted global attention following the need for sustainability and preservation of natural resources and the minimization of the externalities associated with the exploration and exploitation bio-sphere assets. Studies have shown that sustainable capital reporting is increasingly the focus of corporate reports in recent years in respect of environment, social, human and intellectual capitals. Sustainable capital reporting is usually reflected to be the aspect of reporting on a firm's influences on the nature, society and the economy.

One key area of corporate sustainable capital from where business firms create values for their goods and services but not likely forming an integral part of annual reports and accounts of forms in Nigeria is Natural/Environmental Capital Reporting.

Natural/Environmental capital reporting is the production of financial and non-financial information of an organizations' impact on any stock or flow of energy and material that produces goods and services. Natural/environmental capital reporting concerns with the release of information on environmental assets/restoration costs by operating firms. The notion of environmental corporate capital is often assumed as any store of natural wealth or ecological properties that offers a flow of valuable goods or services, now and in the future (Brand, 2009). Udo (2016) opined that environmental capital reporting is a framework for organizations to identify and account for past, present environmental assets, costs and benefits as well as provisions for contingent liabilities and assets to support managerial decision-making control and for public disclosure

Environmental capital can also be described as a monetary representation for the limited stocks of physical and biological resources found on earth, and of the limited capacity of ecosystems to provide ecosystem services (TEEB, 2010). Ecosystem services and be further defined as the direct and indirect contributions of ecosystems (a consortium of plants, animals, microorganisms, and physical surroundings interacting together as a functional unit) to human well being. In general, natural capital is not man-made but their worth and magnitude to yield goods and service are affected by human activity. Environmental assets can in principle be sustained in permanence as far as their rate of extractions do not exceed their rates of sustainability and development.

Natural capital is seen as a key input in production (raw material inputs) and ensuring continuation of existing economic activity (via regulating services to ensure consistent flow of essential ecosystem services). Environmental capital can be said to be

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any stock of natural endowments or environmental assets (such as earth, water, atmosphere, ecosystems) which provide raw materials, now and in the future (Ekins, Simon, Dautsch, Folke, and DeGroot, 2003).

Natural capitals are environmental assets in their role of providing natural resource inputs and environmental services for economic production. Technically, natural capital is the stock of natural ecosystems that yields a flow of valuable ecosystem goods and services. Environmental capital includes the land, water, atmosphere, and the many natural resources they contain, including biological systems with living (biotic) and non-living (abiotic) components.

The United States of America Environmental Protection Agency (1995) highlighted seven benefits of practicing environmental accounting disclosures as follows: provision of better estimates or the standard costs to the firm for producing a product. Thus, improves pricing and profitability; allocation of costs to the appropriate product, process, system or facility and thus reveals costs to the responsible managers; assist managers in targeting cost reduction, improving environmental quality and in reinforcing quality principles; motivate staff to search for creative ways to reduce environmental costs; encourages changes in processes to reduce waste, reduce resources use, recycle waste or identify markets for waste; increase employee awareness of occupational health and safety issues; and increases the likelihood of the company having a competitive advantage and greater customer acceptance of the firm's product or service. Environmental accounting programs provide the expected cost of environmental and workforce hazards which is added to the supply cost of the input to get the real cost of that output.

### 2.1.2 Firm Performance

The concept of firms' performance has to do with the level of success or failure of a firm. Generally, the common firm performance measures often used are revenues, growth in market share, sales growth, capital adequacy, financial ratios such as return on equity, return on assets, profit margins, liquidity ratios and stock prices. Firms' performance is mostly evaluated in terms of profitability since it measures the efficiency of the managers and the firms' returns/profit for their investors. Profitability measures provide an insight to the degree of success or otherwise in achieving its primary objective.

In this study, the Return on Assets (ROA) measured as the extent to which profit earned on every \$1 invested on or utilized of total assets is considered the measure of firms' performance as it take into consideration total assets or all capitals in the generation of the firms' profits or returns (Etim and Idorenyin, 2021). The ROA is also deem a good proxy for firm performance because it assesses the ability of firms' management in utilizing the assets of the entity to generate incomes or returns.

### 2.1.3 Environmental/Natural Disclosure Measurement

In order to measure the firms environmental/natural capital disclosure, we adopt the International Integrated Reporting Initiative (2013) index. The IIRC (2013) provides guidelines to firms in reporting on economic, environmental, social aspects, intellectual and human capitals and of thee activities, products and services, and is the internationally accepted standard for any sustainable capital reporting.

The unweighted sustainable disclosure index is calculated as:

$$\text{Unweighted disclosure index} = \frac{\text{Each company's disclosed items}}{\text{Total no. of items expected to be disclosed by the company}}$$

This index has been adopted in studies in countries like Malaysia (Nor et. Al., 2016), Bangladesh (Ullah et al., 2013), and the United States of America (Razeed, 2010), among others.

## 2.2 Theoretical Review

The theory adopted for this study is the "Opened System Theory" initially developed by Ludwig Von Bertalanffy (1956), a biologist, but it was immediately applicable across all disciplines. Traditional theorists regarded organizations as closed systems that are autonomous and isolated from the outside world. In the 1960s, however, more holistic and humanistic ideologies emerged. Recognizing that traditional theory had failed to take into account many environmental influences that impacted on the organizational efficiency and effectiveness. In modern time, the opened system theory is embraced by theorists and researchers because of how external environmental influence the performance of an entity.

From the economic perspective, opened system theory considers the variables that can affect the financial performance of manufacturing companies which include the various capitals, economic growth, price levels, among others. The interactions between the economic and environmental variables (natural resources/capitals) determines to performance of reporting entities in terms of inputs and outputs. The interactions of the diverse variables that affect firms' survival, sustainability and performance makes the opened system theory considered relevant for the study.

## 2.3 Empirical Review

Some relevant empirical studies relevant to the study are reviewed in this section. Udo (2019) examined Environmental Accounting Disclosure Practice (EADP) in annual reports of listed oil and gas companies in Nigeria. Ex-post facto research design was adopted in the study. The ten (10) oil and gas companies listed on the floor of the Nigerian Stock Exchange (NSE) was the population of the study. An environmental disclosure index with 40 items in line with Global Reporting Initiative (2013) was developed and environmental data from the annual reports of the companies from 2009-2018 were captured using content analysis. Data obtained were analysed using descriptive and inferential statistics. Findings revealed that the studied oil and gas companies were disclosing

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very inadequate financial and non-financial environmental information in their annual report at the minimum disclosure practice of 0.0283 and maximum of 0.2727, with overall average of 11.67%. Although, the study was novel, it focuses only on extent of disclosure without examining the lineage between the environmental/natural resources (capital) and performance of the studied firms. Also, the study looked at only the oil and gas sector with no spread of industries. These short comings, this study seek to address by looking the manufacturing sector as a whole which covers the industrial, consumers goods, as well as the real sectors.

Grigoris, George, Eleni and Xanthi (2016) examined the impact of Environmental, Social and Governance (ESG) reporting on the financial performance of the United States (US) companies. In particular, the impact of corporate social, environmental and governance disclosures on financial performance was investigated in terms of involvement in socially and environmentally responsible initiatives. The environmental, social and governance disclosure scores as calculated by Bloomberg was used as a proxy for corporate involvement in socially responsible initiatives. Fixed effects regression was employed to estimate the relationship and effects between the extent of Corporate Social Disclosures (CSD) and financial performance using the data of listed companies on the standard and Poor's 500 firms during the period 2009-2013. The results suggested that the involvement in social and environmental initiatives have a significantly positive effect on financial performance. In addition, the control variables, such as total compensation to directors, Chief Executive Officer (CEO) duality and women presence on board were statistically significant to financial performance.

Bassey, Effiok and Eton (2013) examined the impact of environmental accounting and reporting on organizational performance using oil and gas companies operating in the Nigeria Niger Delta region. They employed the Pearson's Product Moment Correlation Co-efficient. The elements of study were selected by means of random and stratified sampling technique. Data were collected from both primary and secondary sources and analysed using tables and Pearson's product moment correlational analysis. The results show that environmental related information in financial statements and reports, and recommended that firms should adopt a uniform method of reporting and disclosing environmental issues for the purpose of control and measurement of performance. The study was conducted without isolating environmental/natural capital to evaluation how it influence performance of the studied firms.

Ahmed, Waseer, Hussain, and Ammara (2018) studied the relationship between environmental accounting and financial performance of firms listed on Pakistan Stock Exchange. Data collected from the annual reports of the companies for the period 2006-2016, were analysed using regression analysis technique. The empirical analysis showed a significant positive relationship between environmental accounting practices and firm's size, whereas earning per share and return on capital employed statistically turned out to be insignificant. Therefore, companies which were big in size spend more resources for social welfare in terms of environmental pollution protection. This study evaluated environmental accounting practices with no emphasis on environmental capital and how it impact corporate performance.

Magara, Aming'a and Momanyi (2015) examined the effect of environmental accounting and reporting on company financial performance in Kisii County. Descriptive survey research design was adopted for the study. The sampled size was one hundred and forty-four (133) respondents consisting accountants and auditors in the sixteen (16) corporate organizations. Data collected using questionnaire and secondary sources were analysed using descriptive and inferential statistics. Findings revealed that the perceived financial performance of the corporate organization in general was in good status as perceived by the employees. Results further revealed that the constructs of environmental accounting and reporting (environmental information, environmental evaluation and compliance with environmental laws) are significantly positively related to perceived financial performance of the corporate organizations.

Yahaya (2018) examined the influence of environmental reporting practices on firm financial performance in Nigeria. The study adopted longitudinal panel research design. Fifty-one (51) listed environmentally-sensitive firms constituted the population and sample of the study, covering the financial years 2000 to 2016. The data were sourced from the annual reports and accounts of the firms. Using return on assets as proxy for financial performance and environmental disclosure practices were measured by green reporting index, which is a product of environmental capital reporting both quality and quantity; extracted through content analysis and computation of required ratios. Descriptive and inferential statistics were used to analysed the data. The correlation results showed that environmental reporting practices and financial performance have positive and statistically significant relationship. The regression results showed that environmental capital reporting has positive and significant effect on financial performance of the studied firms. It was concluded that environmental disclosure practices are important considerations in the determination of corporate financial performance.

Makori and Jagongo (2013) established a significant relationship between environmental accounting and profitability of selected firms listed in India stock exchange. The data for the study were collected from annual reports of 14 randomly selected quoted companies in the capital market, and analysed using multiple regression models. The findings of the study showed that there exist a significant negative relationship between Environmental Accounting and Return on capital Employed (ROCE) and Earning per share (EPS). They concluded that environmentally-sensitive firms be encouraged through tax credits to comply with environmental laws and that environmental reporting be made compulsory for all companies in the country.

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Dohre, Stanila and Brad (2015) examined the influence of environmental and social information reporting on financial performance of Romanias listed entities. Specifically, to examine information on how Romanian listed companies report environmental and social indicators and whether this has an impact on financial performance. They employed a four time period panel fixed effect model for first category of the Bitcharest Stock Exchange Companies. The results point out that increasing water, air and soil protection has a negative impact on current return on equity, while no effects were detected on return on assets and stock market returns. Other environmental variables such as gas, energy or sound were found not to be statistically significant.

Abdullah (2018) examined social and environmental accounting effect on some companies profit in Erbil, Iraq. The main aim was to find out to what extent social and environmental accounting effects the company's profit. Survey research design was used in the study mainly questionnaire administration and responded by the Chief Financial Officers (CFO). Fifty (50) national and international companies were used as the samples and profits of 2017 were used for the study. The result revealed that there is a significant negative effect of social accounting on profitability while there is a significant positive effect of environmental accounting on profitability.

Etale and Otuya (2018) studied the relationship between environmental responsibility reporting and financial performance of quoted oil and gas companies in Nigeria. Content analysis approach was adopted to generate data for the study from secondary sources of published annual reports of 13 oil and gas companies quoted on the floor of the Nigerian Stock Exchange (NSE) for the years 2012-2017. Data were analysed using Ordinary Least Squares (OLS) regression method. The result show significant positive relationship between financial performance and environmental responsibility reporting in the oil and gas sector of Nigeria. They concluded by recommending regulatory framework for environmental reporting in the country.

### 2.4 Gap in the Literature

From the empirical studies reviewed, it seems that there is no study that disaggregatively investigates environmental/natural capital reporting influence on performance of manufacturing companies in Nigeria. More so, most the existing empirical investigation sometimes focused on a single sector like the oil and gas, cement or pharmaceutical companies. This study considers data for quoted manufacturing companies directly involved with environmental/natural capitals or resources.

### 3.0 METHODOLOGY

Ex-post facto research design is used for the study. The design was considered most appropriate for the study as it allows for the use of existing data that the researcher cannot manipulate.

#### 3.1 Population and Sample Size of the Study

The population for this study consist of the twenty-eight (28) firms in the manufacturing industry (the industrial and natural resources companies) quoted and with actively traded stocks on the floor of the Nigerian Stock Exchange from 2009 financial year to December 31, 2018. The selection of this population is premised on the fact that, the firm belong to the sector of the Nigerian economy that deploy greater environmental/natural capital for value and wealth creation.

Using Taro Yamene's sample size determination formula, twenty-three (23) firms out of the total population of twenty-eight (28) firms at an error term of 10% were selected for the study (see Table 4.1 for list of firms).

#### 3.2 Theoretical Specification of Model

The theoretical specification of model is built on the understanding that organizational performance is a function of the capitals which sustain the entity. For this study, organizational performance is proxy by Return on Assets (ROA), which is a function of environmental/natural capital Reporting (ECR), apriori expectation of a positive (1) influence.

This is presented in Table 3.1, thus:

**Table 3:1: Theoretical Specification of Model and Apriori Expectation**

Variables	Type	Measurement/Definition	Apriori Sign	Source
Performance (profitability)	Dependent	Profit before interest and Tax (PBIT) Total Assets		Annual Reports
Environmental/Natural Capital Reporting (ECR)	Independent	$\sum_{it}$ (scores of ECR perform) $\sum_i \sum_t$ (scores of all possible cases of all the firms ECR for the year	+	Annual Report

Source: Researchers' Extract, (2021)

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### 3.3 Empirical Specification of Model

An ordinary Least Squares (OLS) model of simple linear regression is fitted to determine how the dependent variable, performance (ROA) is explained by the independent variable – environmental/natural capital reporting (ECR). The functional and econometric forms of the model are stated as:

$$\text{Perf}_{it} = f(\text{ECR}_{it}) \quad 3.1$$

Specifically;

$$\text{ROA}_{it} = \alpha_0 + \alpha_1 \text{ECR}_{it} + e_{it} \quad 3.2$$

Where;

Perf. = Performance, measured by profitability and proxy by Return on Assets (ROA)

ECR = Environmental/Natural Capital Reporting (ECR<sub>it</sub>)

e = error term

i,t = Company i in year t.

### 3.4 Method of Data Analysis

Descriptive and inferential statistics were used to analysed the data. To determine the level of environmental/natural capital reporting engaged by the selected listed manufacturing firms in Nigeria and the values/scores, a checklist of seven(7) items in line with International Integrated Reporting Council (IIRC, 2013) framework was carried out using content analysis. Each firm was scored “1” for full disclosure, “1/2” for partial disclosure, and “0” for non-disclosure under content analysis, which is presently the most widely used technique for analysis of items in annual reports.

Annual financial accounts of the selected manufacturing firms from 2009 to 2019 were examined and extracted sing content analysis for the level (quality) of environmental/natural capital reporting (ECR<sub>it</sub>) score for each firm was computed by sing the probability index based method given as:

$$EL_{it} = \frac{\sum_{it} (d_{it} \text{ disclosed of environmental/natural capital issue per firm for the year})}{\sum_{it} \sum_{it} (d_{it} \text{ all possible cases of all the firms' capital disclosures for the year})}$$

Where;

i, t = company i in year t (pooled data),

Σ = Summation

Σ(d<sub>it</sub> disclosed of ER issues per firm for the year) = summation of disclosure sores of the ECR of each sampled firm in a given year.

Σ<sub>i</sub> Σ<sub>t</sub> = (d<sub>it</sub> all possible cases of all the firms' capital disclosures for the year = Summation of the grand totals of all the possible disclosures of ECR issues of all the firms in a given year.

A Simple Ordinary Least Squares (OLS) linear model was used to examine the influence of environmental/natural capital reporting on returns on assets.

## 4.0 RESULTS AND DISCUSSION OF THE FINDINGS

The data generated for analysis in this study is presented, interpreted and discussed in this section.

### 4.1 Presentation and Analysis of Empirical Results

The computation of environmental/natural capital reporting scores to show the level of reporting for each of the selected firm's for a tend (10) year period, 2009-2018.

**Table 4.1: Level of Environmental/Natural Capital Reporting for each of the selected Firms in the Annual Reports from 2009-2018**

S/N	Firm Name	n.	Mean	SD
1s	Aluminum	10	0.026	0.002
2	Austinlaz	10	0.070	0.017
3	Bata Glass	10	0.039	0.012
4	Berger Paint	10	0.055	0.020
5	BOC Gases	10	0.039	0.011
6	CAP Plc	10	0.066	0.012

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7	CCNN PI	10	0.036	0.013
8	CUTIX	10	0.031	0.012
9	Dangote	10	0.052	0.024
10	DNM	10	0.049	0.035
11	First ALU	10	0.041	0.012
12	FTNCOCOA	10	0.045	0.013
13	Greif	10	0.023	0.008
14	Laferge	10	0.104	0.023
15	Livestock Feeds	10	0.034	0.012
16	Multiverse	10	0.044	0.017
17	NOTORE	10	0.040	0.020
18	Okomu Oil	10	0.041	0.013
19	PCMN	10	0.023	0.006
20	PP&P Nig.	10	0.043	0.016
21	Premier	10	0.043	0.065
22	Preso Plc	10	0.045	0.013
23	Thomaswy	10	0.045	0.018

*Source: Researchers' Computation, (2021) using SPSS v 20.0*

Result in Table 4.1 shows the average level of environmental/natural capital reporting in each of the manufacturing firms in the annual reports. From the results, it can be inferred that Laferge reported the highest value of environmental/natural capital reporting with above 10.4%, followed by AUSTINLAZ with 7.0%, CAP Plc. 6.6%, Berger Paint 5.5%, Dangote 5.2%, others reported results below 5.0%. The findings of the analysis indicate that environmental/natural capital reporting is still not fully embraced in Nigeria and that the firms operating in the manufacturing sector are reporting very little information about their environmental/natural capitals.

**Table 4.2: Descriptive Statistic for the Research Variables**

Variable(s)	N	Statistic	Minimum Statistics	Maximum statistic	Mean statistic	Std. Deviation Statistic	Skwness statistics std. Error	Kurtosis Statistic	Std Error
Environmental/ Natural Capital Reporting	230	0.045	0.000	0.228	0.045	0.026	2.333		
ROA	230	0.110	-0.516	1.732	0.110	0.207	3.561		

*Source: Researchers' Computation (2021) using SPSS v. 20.0*

Result in Table 4.2 presents the descriptive statistics for the research variables. Results shows mean of 0.045, standard deviation of 0.026, minimum value of 0.000 and maximum value of 0.228 for environmental/natural capital reporting, with skewness of 2.444 which is greater than 0 indicating that the variables skewed to the right. This implies that, during the period of the study, the values of the variable increased more than it decreased. Result also yielded Kurtosis of 10.870 for environmental/natural, which is greater than 3.000 Kurtosis for the normal distribution, implying that the research variable is leptokurtic (excess Kurtosis). The minimum, maximum, mean and standard deviation for the dependent variable, ROA were -0.516, 1.732, 0.110, and 0.207 respectively, the skewness of 3.516 and kurtosis of 23.716 shows the variable exhibited similar pattern with the independent variable, environmental/natural capital reporting.

The normality of these variables were examined using Shapiro-Wilks test and the result presented in Table 4.3

**Table 4.3: Summary of Normality Test using Shapiro-Wilk test for the Research Variables**

Variable(s)	Shapiro-Wilk Statistics		DF	P-value
Environmental/ Natural Capital Reporting	0.808		230	0.000
ROA	0.724		230	0.000

*Source: Researchers' Computation (2021) using SPSS v. 20.0*

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Table 4.3 reveals that the research variables have probability values of 0.000 which were less than 0.05 ( $P < 0.05$ ) which indicates that the distribution of the data obtained from the variables are not normally distributed

### 4.3 Model Evaluation and Test of Hypothesis

The econometric model stated for this study was given as:

$$ROA_{it} = \alpha_0 + ECR_{it} + e_{it}$$

From the results of the OLS analysis, we obtain:

$$ROA_{it} = 0.053 - 0.168ER + 0.598$$

**Table 4.4: Regression Summary Showing the Influence of ECR on ROA**

Model	R	R-Square	Adjusted square	R- Estimate	Std. Error of the	Durbin-Watson
1	0.384	0.148	0.132	0.193		2.039

*Source: Researchers' Computation (2021), using SPSS V. 20.0*

**Table 4.5: ANOVA Result Summary of ROA and ECR**

Model	Sum of Square	Df	Mean Square	F-cal	F-crit.	P-value
Regression	1.453	4	0.363	9.735	2.412	0.000
Residual	8.396	225	0.037			
Total	9.849	229				

*Source: Researchers' Computation (2021), using SPSS V. 20.0*

**Table 4.5: Coefficients of the Regression of ROA with ECR**

Model	Standardized $\beta$	Std. Error	t-cal	P-value	Tolerance	VIF
Constant	0.053	0.029	1.840	0.067		
ECR	-0.168	0.598	-2.222	0.027*	0.666	1.502

*Source: Researchers' Computation (2021), using SPSS V. 20.0*

Table 4.4 presents summary result of the effect of environmental/natural capital reporting on profitability of the manufacturing listed firms in Nigeria. From the results, a regression square ( $R^2$ ) coefficient of determination of 0.148 was obtained, which means that 14.8% was the overall contribution of environmental/natural capital reporting on the return on assets (dependent variable). Durbin-Watson statistic of 2.039 was obtained and greater than 1 but less than 3.0 meaning that there is no evidence of auto-correlation.

Result of Analysis of Variance (ANOVA) showing whether there is a regression relationship between the dependent variable (profitability) and the independent variable (ECR) shown on Table 4.5 reveals F-calculated value of 9.735 with p-value 0.000 compared to the f-critical value of 2.412 at 0.05 level of significance. This means that there is a significant regression relationship between the variables of the study.

In Table 4.6, the regression coefficient for the model parameters were presented showing the effect of the independent variable on the dependent variable. The result shows that ECR had ( $\beta = -0.168$ , std. Error = 0.598, t-cal. = -2.222,  $P = 0.027$ ). This means that as ECR increases, ROA decreases and vice versa. The implication is that, if other factors are held constant, for every N1 increase in environmental/natural capital reporting, the profitability (ROA) of the listed manufacturing firms will decrease by N0.168.

Also, the presence of multi-collinearity was checked using the Variance Inflation Factor (VIF) and tolerance level. The values for ECR were 0.666 for tolerance level and 1.502 for VIF. These values were greater an 0.1 in the case of tolerance level and less than 10 for VIF, indicating that there is no evidence of multicollinearity.

The hypothesis for the study was stated as:

Ho: Environmental/natural capital reporting has no significant effect on the profitability of the listed manufacturing firms in Nigeria. Given the regression coefficients in Table 4.6, the calculated t-value of -2.222, P-value = 0.027 ( $P < 0.05$ ), ECR has statistically significant negative effect on ROA, the null hypothesis is rejected, which means that environmental/natural capital reporting has a significant effect on profitability of the selected listed firms in Nigeria.

The result obtained contradict the apriori expectation that this category of capital should exert positive effect on profitability of manufacturing firms in Nigeria. The result support earlier studies conducted by Makori and Jagongo (2013), Nor et al (2016) and Udo (2019) who also found negative effect between variables of the study.



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### 5.0 SUMMARY AND CONCLUSION

The objective of the study was to examine the effect of environmental/natural capital reporting on the performance (profitability) of listed manufacturing firms in Nigeria between the years 2009-2018. The result of the descriptive analysis shows that sampled companies are not reporting much of this environmental/natural capital in their annual reports as results reveal about 10.4% highest average reporting profile and 3 other companies with about 5.0% average among the 23 manufacturing firms studied.

In summary, environmental/natural capital reporting is negligible among industrial and natural resource based companies in Nigeria. This is a poor indices in the current global shift to green accounting reporting.

It is recommended that regulatory authorities for corporate reporting framework should as a matter of urgency come up with mandatory reporting framework for all companies with environmental/natural capital to meet a minimum reporting benchmark in line with global best practices.

### 5.1 Implication of the Study Findings

The implications of the study findings is viewed from the awareness of the need for environmental/natural capital reporting annual reports of manufacturing firms in Nigeria. It provides the medium of awareness to the regulatory and supervisory agencies as well as public interest entities to realize the real position of environmental/natural capital reporting and to formulate more formidable policies and laws regarding this aspect of capital besides the financial capital which has been the bane of financial reporting. The findings also contribute to literature in this aspect of sustainable and natural resources accounting.

### 5.2 Limitation of the Study

There are number of limitations associated with this study. First, most of the manufacturing firms particularly those in the oil and gas, and pharmaceutical sectors in Nigeria that deal more on natural capital are not quoted in the Nigerian Stock Exchange, hence did not form part of the study sample. Further empirical research is needed in this sectors. Second, environmental/natural capital reporting is not part of the mandatory disclosure requirements in Nigeria. Therefore, companies are at their discretion to disclose. The need for regulatory framework in this regard. Third, the model employed for the study was a simple linear model of the OLS, because only one capitals component was study. A call for more capitals component to be studied with a multiple regression model. However, this limitations did not invalidate the findings of the study.

### 5.3 Suggestions for further Research

It is suggested that a further study be conducted to examine the effect sustainable capitals on the profitability of manufacturing firms not only in Nigeria, but in other emerging economies.

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### APPENDIX

#### CONTENT ANALYSIS CHECKLIST

#### ENVIRONMENTAL/NATURAL CAPITAL REPORTING

- i. Carbon emissions
- ii. Energy consumption per energy source
- iii. Quantity of waste
- iv. Ecological accidents
- v. Recycled waste
- vi. Environmental protection investment
- vii. Animals/specimens purchased for trials.