IOSR Journal of Economics and Finance (IOSR-JEF)
e-ISSN: 2321-5933, p-ISSN: 2321-5925.Volume 10, Issue 1 Ser. III (Jan. – Feb.2019), PP 07-27
www.iosrjournals.org

Environmental Accounting Disclosure and Firm Value of Industrial Goods Companies in Nigeria

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Abstract: *Companies are expected to prepare an annual report which shows both qualitative and quantitative 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 financial performance and report on environmental accounting. Therefore, this study examined the effect of environmental accounting disclosure on firm value of listed industrial goods companies in Nigeria from 2007-2016. The ex-post facto research design was adopted in this study while the data were gathered through the individual sample company annual financial statement. Multiple regression was used to analyze the effect of environmental accounting disclosure on firm value. Environmental accounting disclosure was measured by non-financial indicators, financial indicators and performance indicators while the firm value is measured by Tobin's Q. From the result, it is evident that non-financial indicators havea positive significant effect on firm value while performance indicators havea negative significant effect on firm value and the financial indicator has no significant effect on firm value of industrial goods companies in Nigeria. Therefore, there is a need for corporate entities to improve their environmental responsibility practices and disclose comprehensively their environmental risks, liabilities and impact on the environment. The study suggests that sanctions be put in place to encourage disclosures most especially non-financial indicators because it has a direct influence on the firm value of the industrial goods companies in Nigeria.*

Date of Submission: 23-01-2019 Date of acceptance: 07-02-2019

I. 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 and quantitative 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.

Environmental issues can have an influence on annual reports prepared by organizations. International accounting standards such as International Accounting Standard Board (IASB), Financial Accounting Standard Board (FASB) addressed the general principles for the recognition, measurement and disclosure of environmental matters in a financial report (IAS-39). The introduction of environmental laws and regulations may involve an obligation to recognize an impairment of assets and consequently a need to write down the carrying value. A failure to comply with legal requirements concerning environmental matters such as emission or waste disposal may require accrual of remediation works, compensation or legal costs (Rahman, 1999).

Cho and Patten (2007) identified that if an organization fail to comply with the legal requirements regarding pollution control, the firm may risk a fine or penalty. They went ahead to opine that; some annual operating cost is environmental in nature. For example, energy costs can be considered an environmental cost as the use of fossil fuels is a source of carbon dioxide and air pollution.

According to Clarkson, Li, Richardson and Vasvari (2008), the disclosure of items in annual reports and transparency are critical elements of a robust corporate governance framework as they provide the basis for informed decision-making by shareholders, stakeholders and potential investors with respect to capital

allocation, corporate transactions and financial performance monitoring. High-quality environmental accounting disclosure influences investors as well as lenders decisions because they assess risks and returns and decide where best to place their money, strengthen the efficiency of capital allocation as well as offer the benefit of reducing the costs of capital. Furthermore, high quality corporate environmental disclosure provides clarity on the extent to which companies meet legal and ethical requirements. The use of natural resources is indispensable to economic development and not devoid of environmental consequences as traceable to the environmental degradation and atmospheric pollution experience in Nigeria. Based on this, to satisfy consumer needs the persistent consumption of our most valued natural resources in the present day, will compromise the ability of future generation to meet their own need (Beredugo & Mefor, 2013).

In the developing countries and Nigeria in particular, research previously conducted has shown that environmental accounting disclosure is voluntary as a result of non-availability of either local or international standards to guide disclosure. Companies tend to disclose this information to conform to industry practices, pressures from environmental activist and advocates, relationship with the parent company (Multinational corporations), the ownership structure of the company, size and level of profitability etc. The current position of environmental accounting reporting and disclosures might best be described as confusing and full of ambiguity. Statutory, regulatory, quasi-regulatory agents and standard setters are yet to prioritize the reporting and disclosure of environmental accounting. While the accounting profession globally recognized the financial importance and significance of environmental cost and benefits (Hassan & Hakan, 2012).

According to Hassan and Hakan (2012) nowadays, companies cause a lot of environmental challenges because of profit maximization, the endless needs, rapidly advancing technological developments, unconscious consumption of natural resources as they execute their operations. The severity of environmental problems as a global phenomenon has its adverse impact on the quality of our lives. Accounting has an instrumental role in disclosing environmental responsibility for different entities whether industrial or commercial services and at all levels whether micro and macro. Thus, accounting became concerned with achieving new goals such as measuring and evaluating the potential or actual environmental influence of projects and organizations (Asuqou, 2012).

Firm value is broadly seen as an economic model showing the market value of the entire corporation. It is a sum of the interest of all shareholders of a company especially: creditors and shareholders. The profitability, market value, as well as the growth prospect of a company, is indicated by the performance determinants of that organization.Environmental resources used influence either positively or negatively to some reasonableextent the performance indicators as a result of environmental disclosures in a financial report. It is pertinent to say that, since disclosures of this information influences company performance, the study ascertain the effect of this environmental accounting disclosure on company firm value.

Environmental accounting disclosure for some period of time in Nigeria has been more of exploratory and descriptive and it only focused mainly on the phenomenon (Armaya'u, 2010). According to the Global Reporting Initiative (2011:6) "thousands of organizations worldwide now produce sustainability reports. KPMG research revealed that in 2008 nearly 80 percent of the largest 250 companies worldwide issued sustainability reports, up from around 50 percent in 2005." Similarly, KPMG International Survey of 2011 which covers 34 countries (Nigeria inclusive) indicates that 95 percent of the 250 largest global companies now reports on their corporate responsibility activities. Also, corporate responsibility reporting has gained ground within the Top 100 companies in each of the 34 countries (KPMG, 2011:4-9). This is in response to the demand for organisations to be more transparent in how they treat their economic, social and environmental activities as they affect their stakeholders. Sustainability Reporting is therefore seen as impacting substantially on the performance of corporate organisations.

Studies of Fombrun and Shanley, (1990) and Rosen, Sandler and Shani(1999) separately discovered that investments in Environmental Accounting are associated positively with corporate financial performance. Hence, environmental accounting helps build name recognition, customer loyalty market position. Even in the recent studies, results show a positive relationship among environmental accounting disclosure and Corporate Performance, Waddock and Graves (1997), Roman, Hayibor, and Agle (1999), Orlitzky (2001), Ruf, Muralidhar, Brown, Janney and Paul (2001), Simpson and Kohers (2002), Tsoutsoura (2004). Companies in Nigeria are expected to disclose activities that are related to the environment in the annual report of the organization. If environmental accounting disclosure is practised by organisations in Nigeria; the question then is, what is the impact of such disclosure on the corporate firm value of these organisations? This study,therefore, will fill the gap by empirically to investigate the effect of environmental accounting disclosure on the firm value of Nigeria industrial goods companies.

Though studies mentioned above exist on environmental accounting disclosure and performance of organizations most of these studies were done in another part of the world with less effort in Nigeria economy firms. Charles, John and Umeoduagu (2015) ascertained environmental accounting disclosures and firm performance in Nigeria Food and Beverage firms spanned 2006-2015. Oraka and Egbunike (2016) determined

environmental accounting information on the performance of Consumer Goods Manufacturing. Ndukwe and John (2015) ascertained determinant of environmental disclosures in Nigeria Oil and Gas Companies. Bassey. Sunday and Okon (2013) determined the Impact of Environmental Accounting and Reporting on the organizational performance of selected oil and gas companies in the Niger Delta Region of Nigeria. Musa, Peter and Bukar (2015) assessed environmental accounting disclosure practice of Nigerian Quoted Consumer Goods Companies. Akinlo and Iredele (2015) study corporate environmental disclosures and market value of quoted companies in Nigeria.

The reviewed studied combined environmental accounting disclosure while this study separated environmental accounting disclosure into financial indicators, non-financial indicators and performance indicators which are a gap this study filled.Also, all the study reviewed none has been done in Nigeria industrial goods companies. Therefore, this study ascertained environmental accounting disclosure effect on firm value in industrial goods companies in Nigeria.

1.1 Objective of the Study

The main objective of this study examines the effect of environmental accounting disclosure on firm value of industrial goods companies in Nigeria with specific objectives as to:

i. ascertain environmental disclosure financial indicators index effect on firm value of industrial goods companies in Nigeria.
ii. determine the effect of environmental disclosure non-financial indicators index on firm value of industrial goods companies in Nigeria.
iii. assess environmental disclosure performance indicators index effect on firm value of industrial goods companies in Nigeria

1.2. Statement of Hypotheses

In view of the objectives of this study, the following hypotheses have been formulated:

H_{01}: Environmental disclosure financial indicators index has no significant effect on firm value of industrial goods companies in Nigeria.

H_{02}: Environmental disclosure non-financial indicators index has no significant effect on firm valueof industrial goods companies in Nigeria.

H_{03}: Environmental disclosure performance indicators index has no significant effect on firm value of industrial goods companies in Nigeria.

II. Literature Review

Conceptual Framework

The concept of Environmental Accounting Disclosure

Environmental Accounting is aimed at achieving sustainable development, by maintaining a favourable correlation with the community and pursuing effective and efficient environmental conservation activities (Japan Business Accounting Council, 2000). According to this Council, accounting procedures allow an organization to identify the cost of environmental conservation during the normal course of business, identify benefit gained from such activities and provides the best possible means of quantitative measurement and support the communication of its results. Here in, environmental conservation is defined as the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities. According to Japan Environmental Accounting Guidelines (Armaya'u, 2010), environmental impacts are the burden on the environment from business operations or other human activities and potential obstacles, which may hinder the preservation of a favourable environment.

According to the International Federation of Accountants (IFAC) (2005), environmental accounting is a broad term used in a number of different contexts, including:

Assessment and disclosure of environmental related financial information in the context of financial accounting and reporting; Assessment and use of environmental – related physical and monetary information in the context of environmental management accounting (EMA); Estimation of external environmental impact and cost, often referred to as Full Cost Accounting (FCA); Accounting for stocks and flows of natural resources in both physical and monetary term, that is Natural Resource Accounting (NRA); Aggregation and reporting of organization-level accounting, information, natural resource accounting information and other information for national accounting purposes; Consideration of environmental related physical and monetary information in the broader context of sustainability accounting.

According to UK Environmental Agency (2006), Environmental Accounting is the collection, analysis and assessment of environmental and financial performance data obtained from business management and financial accounting system. Environmental Accounting is the incorporation of environmental costs and

information into a variety of accounting practices (Graff, Reiskin, White, & Bidwell, 1998). Daferighe (2010) is of the opinion that environmental accounting involves the identification, compilation, analysis, use and reporting of environmental liabilities and financial material. Environmental accounting can be employed in every industry, no matter the size of the firm, small or large. According to the US EPA (1995) Green Accounting or Environmental Accounting is defined as Identifying and measuring the costs of environmental materials and activities and using the information for environmental management decisions. The purpose is to recognise and seek to mitigate the negative environmental effects of activities and systems. Environmental Accounting makes environmental issues visible to the organization and society. It enables the organization to define its targets on environmental performance and direct them accordingly.

Environmental Accounting also enables the organization to define its central environmental issues in the organization by providing an accurate and detailed picture of environmental concerns. Environmental Accounting is a general term used to integrate environmental issues at the macro or micro level. Mohamed (2002) is of the opinion that, Environmental Accounting at micro level means the entire domain of accounting for the environment including financial accounting, reporting and auditing, and environmental management accounting.Kayode (2011) is of the opinion that environmental accounting is the report by the directors of an organization that attempts to quantify the costs and benefit of that organization's operations in relation to the environment. He further explained that environmental accounting is more than accounting for environmental benefits and costs. It is accounting for any cost and benefits that arise from changes to a firm's products or processes, where the change also involves a change in environmental impacts. He also stated that "Environmental accounting information need not be the product of accountants, nor need it to be used by accountants. Instead, it is any information with either explicit or implicit financial content that is used as an input to a firm's decision - making". Product designers, financial analysis, and facility managers are equally likely to be the users of environmental accounting data.

Environmental accounting can be traced to the "Rig Veda", according to Hindu Philosophy. The Rig Veda ordains that environment is to be treated and lured like children. The concept of environmental accounting may be new for Western accounting. Mathews (1997) describes the development of environmental accounting in three stages:1970 – 1980: The beginning of the first researchers in the area of environmental accounting.1981 – 1994: Debates regarding the role of accounting in the disclosure of information regarding environmental operations. During this period, the interest of researchers in the area increased, managers and accountants, are beginning to pay more attention to the issue of environmental accounting 1995 – 2001:Environmental accounting information is beginning to be taken into consideration.According to Bram (2013), the origins of environmental accounting may be traced to the late 1970s when several European countries initiated work independently of each other (Hecht, 2005). In 1978, the Norwegian Environment Ministry commissioned statistics in Norway to help develop natural resource account as a mechanism to manage natural resources and the environment (Alfsen, 1996). This was a result of growing environmental concerns due to the intense expansion of hydropower, over-exploitation of fish stocks and the discovery of oil and gas reserves. Denmark also was an early adaptor of environmental accounting. In 1975, it started the compilation of energy flow accounts. It was engineered by the 1973 oil crisis which generated great interest in energy efficiency.In 1980, France developed an accounting system for assessing quantitatively and qualitatively, the state and evolution of its natural patrimony (Vanoli, 2005).These initial efforts were focused on obtaining a physical description of natural resource use. Regarding monetary descriptions, he buttressed in his History of National Accounting Credits Kuznets for initiating "a long tradition aimed at making national income an indicator of economic welfare" by means of all sorts of adjustments to conventional GDP.

Environmental Accounting Disclosures

Environmental Costsare costs that the organizations incur to prevent, monitor and report environmental impacts (KASNEB, 2014). US EPA (1995) defines five tiers of environmental costs namely; conventional, hidden, contingent, image and relationship and societal. These costsare broadly divided into two: private costs and societal costs. Private costs are borne by the firm whereas societal costs are borne by society.

Private Costs: Conventional costs are the costs of capital equipment, raw materials and supplies. The costs of using raw materials, utilities, capital goods, and supplies are usually addressed in cost accounting and capital budgeting but are not usually considered environmental costs. However, decreased use and less waste of raw materials, utilities, capital goods, and supplies are environmentally preferable, reducing both environmental degradation and consumption of natural resources.

Hidden Costs: this refers to the results of assigning environmental costs to overlook future and contingency costs. There are several types of environmental costs that may be potentially hidden from managers: First is the upfront environmental costs, which are incurred prior to the operation of a process, system, or facility. These can include costs related to siting, the design of environmentally preferable products or processes, qualifications of suppliers, evaluation of alternative pollution control equipment, and so on.

Whether classified as overhead or R&D, these costs can easily be forgotten when managers and analysts focus on operating costs of processes, systems, and facilities.

Secondly, we have the regulatory costs from activities such as monitoring and reporting of environmental activities and emissions, the cost for searching for environmentally responsible suppliers and ongoing cost of cleaning contaminated land (KASNEB, 2014).

Contingent Costsare environmental costs that are not certain to occur in the future but depend on uncertain future events. They are a cost that may or may not be incurred at some point in the future. For example, the cost that is involved in remediating future spills (KASNEB, 2014).

Image and Relationship Costs: theseare less tangible costs because they are incurred to affect subjective perceptions of management, customers, employees, communities, and regulators. This category can include the costs of annual environmental reports community involvement activities and costs expended voluntarily for environmental activities (KASNEB, 2014).

Societal Costis costs that organization imposes on others for which they may not be held legally responsible and which cannot be compensated for in the legal system (KASNEB, 2014). For instance, damage caused to a river because of polluted waste-water discharge, or to ecosystems from solid waste disposal or to asthmatics because of air pollutant emissions are all examples of external costs for which an industry often does not compensate (Uwaloma, 2011).

Non-financial Indicators

According to Karambu and Joseph (2016), Non-financial information is information that concerns the environmental objectives, the management, the policy and other appearances that can broadcast environment performance in non-financial information. The disclosure requirements according to Global Reporting Initiatives under Non-financial information concerning the environmental objectives are:

Compliance (Monetary value of significant fines and the total number of non-monetary sanctions for noncompliance with environmental laws and regulations)

Performance indicators on the environment (water, air, soil). These indicators are defined by the Global Reporting Initiative, and other organizations. The disclosure requirement according to Global Reporting Initiatives comprised under Performance indicators on the environment are:

Water (Total water withdrawal by source; Water sources significantly affected by the withdrawal of water; Percentage and the total volume of water recycled and reused).

Biodiversity (Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas, Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas; Habitats protected or restored; Strategies, current actions, and future plans for managing impacts on biodiversity; Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk).

Emissions, Effluents, and Waste (Total direct and indirect greenhouse gas emissions by weight; Other relevant indirect greenhouse gas emissions by weight; Initiatives to reduce greenhouse gas emissions and reductions achieved; Emissions of ozone-depleting substances by Weight; NO, SO, and other significant air emissions by type and weight; Total water discharge by quality and destination; Total weight of waste by type and disposal method; Total number and volume of significant spills; Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally; Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff) (Karambu & Joseph (2016).

Products and Services (Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation; Percentage of products sold and their packaging materials that are reclaimed by category).

Materials (Percentage of materials used that are recycled input materials)

Energy (Direct energy consumption by primary energy Source, Indirect energy consumption by primary Source; Energy saved due to conservation and efficiency improvements, Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives; Initiatives to reduce indirect energy consumption and reductions achieved).

Financial indicators

Financial indicators (investments and acquisitions of environmental assets, costs, provisions). These indicators expose in monetary terms the behaviour of firms regarding environmental reporting. The disclosure requirements according to Global Reporting Initiatives under financial indicators are:

Transport (Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce).

Overall (Total environmental protection expenditures and investments by type) (Karambu & Joseph (2016).

The concept of firm value

Firm value describes the assets a firm owned. It is necessary because it portrays the prosperity of the business owners. It is the responsibility of the management who serves as the agent of the owner of the corporation to optimally maximize the values of the firm which form the core objective of any corporation. When there is a high firm value it shows that the firm is wealthy and therefore the shareholders' wealth is utilized. The firm value indicates the successfulness level of the shareholders and investors. The performance of companies is shown through the firm value. Firm value is the angle where the Investors also observe the company, and it is relevant to stock price. Ftouhi, Ayed and Zemzem (2010), opined that the increase in stock price will gain high firm value. The performance of a firm can be defined or measured in various different ways including profitability, market share growth, return on investment, return on equity and liquidity. A firm can, by being environmentally sustainable, differentiate its products and thus increase its revenue. Similarly, a firm can save costs on resources, regulatory costs, capital and labour and therewith increase its profit.

Profitability, as well as corporate financial performance, was used by a number of researchers as an explanatory variable for differences in disclosure. However, the association between corporate performance and corporate social and environmental accounting disclosure is arguably one of the most controversial issues yet to be solved (Choi, 1998). According to Bhagat and Black (2002), high Tobin's q shows how effective management of a company has produced a higher market value from the same asset.

Empirical Review

Environmental financial indicators and firm value

Charles, John and Umeoduagu (2017) examined environmental accounting disclosures correlation with financial performance (ROE, ROCE, NPM) of food and beverage companies in Nigeria. Data were gathered via secondary sources and analyzed using Pearson's correlation technique and multiple regression, with the aid of SPSS version 20.00. The outcome revealed that there is a significant correlation among environmental accounting disclosures and return on equity of selected companies. It also revealed a negative correlation among environmental accounting disclosures and return on capital employed and the net profit margin of selected companies. Based on the outcome, the study suggests that firms should adopt uniform reporting and disclosure standards of environmental practices. This will enhance the control and measurement of performance. The study also advocates that firms (especially smaller ones), should be encouraged to disclose their environmental practices in their annual reports in order to enhance their competitiveness which would subsequently, lead to higher corporate performance. Charles, John and Umeoduagu (2017) used multi-variate performance indicators which make the conclusion and recommendation more difficult since there is an indicator of environmental accounting as evidence on return on equity and negative effect on net profit margin and return on capital employed.

Mohammad, Fakhrul and Rezaur (2016) assessed the relationship of company profitability and extent of environmental accounting reporting disclosures in the annual reports in quoted manufacturing companies in DSE. For this research, an Environmental Accounting Reporting Disclosure Index (EARDI) is developed consisting of 21 major environmental accounting disclosures. Return on Asset (ROA) is used as the proxy variable for company profitability. To obtain the EARDI score, content analysis is being used and statistical techniques such as frequency, mean, standard deviation, ANNOVA, Bi-variate regression model analysis was conducted to acquire research outcome. The research paper discloses that only 41 of 166 companies are providing some sort of environmental disclosures in their annual reports and there is a significant positive relation between company profitability and EARDI. Drawing a conclusion from only 41 companies out of 166 companies may not yield a better conclusion because 41 companies are too small.Arong, Ezugwu, and Egbere, (2014) ascertained the effects of environmental cost management on the profitability of the oil sector in Nigeria from 2004 to 2013. Data were gathered via Statistical Bulletin. The data obtained were analysed with multiple regression technique. The outcome revealed that there exists a significant association among environmental cost management and profitability of the Oil Sector in Nigeria. It was also discovered that there are established standards in Nigeria guiding environmental cost management in the Oil & Gas Sector in Nigeria. However, there is a lacuna in the external reporting of environmental cost data in Nigeria.

Makori and Jagongo (2013) investigated into whether there is any significant relationship among environmental accounting and profitability of selected firms listed in India. Using multiple regression analysis, they discovered that there is significant negative association among Environmental Accounting and Return on Capital Employed (ROCE) and Earnings per Share (EPS) and a significant positive association among

Environmental Accounting and Net Profit Margin and Dividend per Share.Daniel and Ambrose (2013) ascertained whether there is any significant relationship between environmental accounting and profitability of quoted India companies. The data for the study were gathered via annual reports and accounts of 14 randomly selected quoted companies in the Bombay Stock Exchange in India. The data were analyzed using multiple regression models. Outcome indicated that there is a significant negative correlation among environmental accounting and Return on Capital Employed (ROCE) and Earnings per Share (EPS) and a significant positive correlation among environmental accounting and Net Profit Margin and Dividend per Share. The study suggested that government should give a tax credit to organizations that comply with its environmental laws and that environmental reporting should be made compulsory in India so as to improve the performance of organizations and the nation as a whole.

Bassey, Sunday and Okon (2013) studied the impact of environmental accounting on organizational performance with particular reference to oil and gas companies operating in the Niger Delta Region of Nigeria. The study was conducted using Pearson's product moment correlation coefficient. Data gathered were presented using tables and analyzed using the Pearson's product moment correlational analysis. It was discovered that environmental cost has satisfied correlation with firm's profitability. It was concluded that environmentally friendly firms will significantly disclose environmental related information in financial statements and reports. The study suggested that company should adopt a uniform method of reporting and disclosed environmental issues for the purpose of control and measurement of performance and that accounting standards should be published locally and internationally and reviewed continually to ensure dynamism and compliance to meet environmental and situational needs. Mohammad, Sutrisno, Prihat, and Rosidi (2013) examined the effect of environmental accounting implementation and environmental performance and environmental disclosure as a mediation on company value. Samples are 59 companies that selected with purposive sampling technique. Analysis technique used is the Partial Least Square (PLS). Outcome indicates that environmental accounting implementation is able to effect on company value, environmental accounting implementation affects on environmental information disclosure, environmental information disclosure affects on company value, environmental performance affects on company value, environmental performance effects on environmental information disclosure. However, environmental accounting implementation has not been able to affect company value via environmental information disclosure, as well as environmental performance has not been able to affect company value through environmental information disclosure.

Environmental non-financial indicators and firm value

Karambu and Joseph (2016) assessed the effect of corporate environmental disclosure on the financial performance of listed firms at the Nairobi Securities Exchange, Kenya. This study made use of longitudinal secondary data from the annual reports and financial statements of listed 61 companies out of which 32 companies were used. Content analysis of sampled listed companies' annual reports was undertaken to examine environmental disclosure practices. A checklist of environmental disclosure items and categories was developed and environmental disclosure indices computed. The causal research design was employed to determine the cause-effect relationship between corporate environmental Disclosure and financial performance. A linear regression model was used to determine the causal relationship among environmental disclosure and financial performance. The overall model was found to be significant. Firm size and leverage have no effect on environmental disclosure. The outcome revealed that environmental disclosure has a positive significant effect on the mean financial performance. The study suggested that firms should engage in environmental disclosure because it leads to increased financial performance.

Oraka and Egbunike (2016) determined the effect of environmental disclosure theme on total asset turnover, cash flow ratio, current ratio, return on equity, and return on assets of Nigeria consumer goods manufacturing companies. The descriptive research design was adopted. The study discovered that there is a significant difference in the environmental disclosure themes of consumer goods manufacturing firms. Also, there is a significant effect of environmental disclosure on total asset turnover and returns on equity, however, no significant effect was found for cash flow ratio, current ratio, and returns on assets of the manufacturing companies. The study suggests a detailed and well spelt out environmental disclosure theme and evidence must be established to provide a firm foundation for corporate social and environmental disclosures among companies. Also, there is a need for standard-setting bodies to set up guidelines or principles or accounting standards in other to improve the financial and non-financial environmental disclosures of companies in Nigeria.

Ndukwe and John (2015) determined the determinants of environmental disclosures on performance in Nigeria 15 oil and gas companies. Performance indicators are firm size, Profit, Leverage and Audit firm type on environmental disclosures. The cross-sectional research design was utilized in undertaking the study spanned 2008-2013 while Binary regression technique was used as the data analysis method. The outcome shows that there is a significant correlation between company size and environmental disclosures. Also, there is no significant correlation between profit and corporate social responsibility disclosures. Furthermore, there is no

significant correlation between Leverage and corporate environmental disclosures. Finally, there is no significant relationship between audit firm type and corporate environmental disclosures. The study concludes that the voluntary stance of environmental reporting has often be used as a cliché for companies to under-report their effect on the environment and this is responsible for the negligence of several corporate entities with regards to corporate social and environmental reporting. The study suggests that incentives be put in place to motivate disclosures. There is no evidence of the diagnostic test in the study of Ndukwe and John (2015) which is not proper because there may be multicollinearity problem in the data.

Bewley and Li (2000) appealed to voluntary disclosure theory to determine environmental disclosures of Canadian manufacturing firms. They used the Wiseman index to measure the 1993 annual report disclosures of 188 companies and industry members to proxy for pollution propensity. They discovered that companies with a higher pollution propensity and greater media coverage of their environmental performance are more likely to disclose general environmental information, an outcome also consistent with the socio-political theories.

Hughes, Anderson, and Golden (2001) ascertained environmental accounting disclosures made by U.S. manufacturing firms in 1992-1993 using a modified Wiseman index to measure disclosures in the president's letter, MD&A, and notes sections of the annual report, and the CEP rankings to proxy for environmental performance. It was discovered that companies rated as poor by the CEP generally make the most disclosures. The recommendation from the study may not be valid as at 2001 since the study variables and the data were of 1992 and 1993. The study period is far from the period in which the study was conducted. Therefore, Hughes, Anderson, and Golden (2001) could have extended the period to 1999 or 2000.

Environmental performance indicators and firm value

Musa, Peter and Bukar (2015) analyzed environmental accounting disclosures practices of Nigerian quoted firms and see how it varies from one company to another since there are no mandatory disclosure guidelines. A sample of 8 quoted companies was selected out of 19 consumer goods firms quoted on the Nigerian stock exchange. Content analysis was used to obtain data from published annual reports of 2013 of the selected firms. And the data gathered were analyzed using one-way analysis of variance to test the hypothesis. It was discovered that accounting standards do not significantly influence environmental accounting disclosures the non-existence of the standard Leads to lack of uniformity in disclosure and variations obtained in testing the hypothesis. It is suggested that with the pressures companies are subjected to disclose every information about their operations, it would be proper if the international accounting standards setting body comes up with a uniform standard on how companies should disclose their environmental accounting information.

Akinlo and Iredele (2014) ascertained the impact of environmental information disclosures on Market Value of fifty quoted companies in Nigeria spanned 2003-2011. The aggregate and individual impact of Corporate Environmental Disclosure (CED) were regressed on Market Value (Tobin's Q) while Firm size was factored in as an extraneous variable. Outcome indicated that CED has a significant positive impact on Market Value when considered in aggregate. In turn, considering the impact of each of the variables, Energy policy (ENP), Impact on Biodiversity (BIO), Award Received for installing Environmental Management System (AWR) has an insignificant positive impact on Market Value with the exception of Environmental Research and Development cost (ERD). Also, Environmental pollution and control policy (EPC), Waste Management Cost (WSM), and Cost of compliance with environmental Laws (CEL) have a negative impact on Market Value. The study suggested that business should take caution in areas where environmental activities impact negatively on the Value of the firm and also invest in areas that enhance value for the company.

Toukabri and Faouzi (2014) assessed the effect of corporate environmental disclosure on the cost of equity capital for a sample of Tunisian firms over the period 2003-2011. Using an approach based on increasing dividends to estimate firms' cost of equity, it was discovered that firms with better environmental disclosure scores display cheaper equity financing. In particular, the findings suggest that investment in practices corporate environmental disclosure contributes substantially to reducing firms' cost of equity. Toukabri and Faouzi (2014) could have extended the period to 2012 or 2013 since the study was conducted in 2014.

Theoretical Framework

Stakeholders Theory

According to Bassey, Sunday and Okon (2013), the basic proposition of the stakeholder's theory is that the firm`s success is dependent on the successful management of all the associations that it has with its stakeholders or originally introduced by Stanford Research Institute (SRI) to means to those groups without whose support the organization would cease to exist (Freeman, 1983). Freeman (1983) in developing the stakeholders' theory incorporates the stakeholders' concepts into categories:A business planning and policy model; and A corporate social responsibility model or stakeholders' management.The first model analyses stakeholder focus on developing and evaluating the approval of corporate strategies decisions by groups whose support is required for the firm`s continued existence. The Stakeholders in this model include the owners,

customers, public groups and suppliers. Although these groups are not adversarial in nature, their possibly conflicting behaviour is considered a constant in the strategy developed by management to best match their firms' resources with the environment (Deegan & Gordon, 1996).

The second model assessed the corporate planning and analysis to include external influences which may be averse to the firm. These adverse groups may include the regulatory environment and/or special interest groups concerned with social issues (Guthrie & Parker, 1990). The second model helps managers and accountants to consider a strategic plan that is adaptable to change in the social demands of non-traditional stakeholders' groups.The stakeholders' theory proposed an increased level of environmental awareness which creates the needs for companies to extend their corporate planning to include the non-traditional stakeholders like the regulatory adversarial groups in order to adopta changing social demand (Trofman, 1999). The main focus of the stakeholders' theory in environmental accounting is to address the environmental cost elements and value in the inclusion of a firm's financial statement. Stakeholders are a group of people that an organization cannot do without there is a need to recognize and satisfy their interest. Manufacturing companies in Nigeria ought to adapt to changing social demands of these group.

According to Lawal (2016), in Friedman and Miles (2002), the concept is about how the organization should be and how it should be conceptualized. They state that the organization should be thought of as ―a grouping of stakeholders‖ and its purpose should be to manage the interests, needs and viewpoints of the stakeholders. Managers must manage the organization for the benefit of the stakeholders, ensuring that their rights are taken care of and those they participate in decision-making processes (Friedman & Miles, 2006). The scholars argue that this is critical to the long-term survival of the corporation. In a broader view, the concept of stakeholder view can be expressed in the sense that the role and purpose of the organization is not anymore guided by profit-taking and maximization of shareholder's wealth; but also to defend the image and values respecting the special relationships that arise and develop between it and all its stakeholders (Friedman & Miles, 2006). The theory is much concerned with the active management of the business environment, relationships and the promotion of shared interests in order to develop business strategies.

III. Methodology

Research Design

This study employed ex-post facto research design. The ex-post facto research design is employed because the study relied heavily on already existing secondary data on environmental accounting disclosure and firm value on industrial goods companies in Nigeria, which were extracted from annual financial statements.The ex-post facto research design is employed because this study relied heavily on already established secondary data on the effect of environmental accounting on firm value of quoted industrial goods manufacturing companies in Nigeria, which will be extracted from annual financial statements. The eighteen (18) companies listed are available on the NSE as at December 31st 2016. The secondary source of data collection was employed because there is the availability of this data in the annual financial reports of the sample of this study. Multiple regression analysis was used because it is known as the best unbiased and efficient estimator, and it also minimized the error term with the view of finding the model or regression equation that explains the data.

Population, Sample and Sampling Techniques

The population of the study is drawn from all the 18 quoted industrial goods companies on the Nigerian Stock Exchange (NSE) as shown in the Nigeria Stock Exchange from 2007 to 2016. Census sampling method was used to sample fifteen of the companies because three of the companies have incomplete data,therefore; they were eliminated from the study. The companies that were eliminated are African paints plc, Chemical and Allied Product Company PLC, Premier Paints PLC. The list of the total population is attached as an appendix in this study.

Method of Data Collection

The study used data mainly from secondary sources. This is because the estimation of the model employed in the study requires the use of data in the form of financial and market information. In this regards, the sources of data for the study are drawn from the annual reports and accounts of the companies for all the years covered by the study.

Technique for Data Analysis and Model Specification

The multiple regression is used to examine the effect of environmental accounting disclosure on firm value. The dependent variable which is a firm value measured by Tobin's q and explanatory variables are environmental disclosure index required to be disclosed in the financial statement of the organization which comprised of the financial indicators, non-financial indicators and performance indicators.

These tests provide an empirical platform for generalization in this study.
The Model for the study is specified below:
FP= f(ECD)
$TQ_{it}= \beta_o +\beta_1 FI_{it}+\beta_2 NFI_{it} +\beta_3 PI_{it}+ e_{it}$
Where:
TQ_{it}= Tobin's q of firm i at time t (Akino & Iredele, 2014)
FI_{it} = Financial indicators of environmental Corporate Disclosure of firm itime t. (Toukabri & Faouzi 2014)
NFI_{it}= Non-financial indicators of Environmental Corporate Disclosure of firm itime t.
PI_{it} = Performance indicators of environmental Corporate Disclosure of firm itime t.
e_{it} = Error term in firm i at time t.
β_o=Constant Interest.
$\beta_1 - \beta_5$= Coefficient of the parameters

Variables Measurement
TQ= Tobin's q of the firms
ECD =

Environmental corporate disclosure which comprised of Non-financial information concerning the environmental objectives, the management, the policy and other appearances that can broadcast environment performance in non-financial information. This measure can procreate a value "1" if the company disclosed this information or category "0" if the company does not disclose the information.The disclosure requirements according to Global Reporting Initiatives under Non-financial information concerning the environmental objectives are:

Compliance (Monetary value of significant fines and the total number of non-monetary sanctions for noncompliance with environmental laws and regulations)

Performance indicators on the environment (water, air, soil). These indicators are defined by the Global Reporting Initiative, and other organizations. The indicator is "0" if the company does not disclose such information or "1" if the company reports or communicate these indicators.
The disclosure requirement according to Global Reporting Initiatives comprised under Performance indicators on the environment are:

Water (Total water withdrawal by source; Water sources significantly affected by the withdrawal of water; Percentage and the total volume of water recycled and reused).

Biodiversity (Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas, Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas; Habitats protected or restored; Strategies, current actions, and future plans for managing impacts on biodiversity; Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk).

Emissions, Effluents, and Waste (Total direct and indirect greenhouse gas emissions by weight; Other relevant indirect greenhouse gas emissions by weight; Initiatives to reduce greenhouse gas emissions and reductions achieved; Emissions of ozone-depleting substances by Weight; NO, SO, and other significant air emissions by type and weight; Total water discharge by quality and destination; Total weight of waste by type and disposal method; Total number and volume of significant spills; Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally; Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff)

Products and Services (Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation; Percentage of products sold and their packaging materials that are reclaimed by category)

Materials (Percentage of materials used that are recycled input materials)

Energy (Direct energy consumption by primary energy Source, Indirect energy consumption by primary Source; Energy saved due to conservation and efficiency improvements, Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives;Initiatives to reduce indirect energy consumption and reductions achieved).

Financial indicators (investments and acquisitions of environmental assets, costs, provisions). These indicators expose in monetary terms the behaviour of firms regarding environmental reporting. Values can be "0" if the company does not advertise this information or "1" if the company indicates such information.

The disclosure requirement according to Global Reporting Initiatives under financial indicators are:

Transport (Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce)

Overall (Total environmental protection expenditures and investments by type)

IV. Results

4.1 Data Presentation

The data for the study is attached as an appendixwhich comprised of environmental accounting disclosure variables (non-financial disclosure, financial disclosures and performance) and firm value which is measured by Tobin's q. The analysis carried out include the descriptive statistics, variance inflation factor (VIF) of the independent variable, Heteroskedasticity test, and the regression result.

4.2 Data Analysis and Results

Table 1 Descriptive Statistics

	FI	NFI	PI	TQ
Mean	0.460000	0.413333	0.460000	1.129533
Median	0.000000	0.000000	0.000000	1.000000
Maximum	1.000000	1.000000	1.000000	2.070000
Minimum	0.000000	0.000000	0.000000	0.840000
Std. Dev.	0.500067	0.494081	0.500067	0.307378
Skewness	0.160514	0.351995	0.160514	1.762900
Kurtosis	1.025765	1.123900	1.025765	4.991279
Observations	150	150	150	150

Source: Output from Eview

Table 1 summarizes the variables of the study as well as the total population of study.

Financial indicators(FI) have a Mean of 0.46000 while the Median of the financial indicator variable shows a value of 0.00000. The deviation from the mean value of industrial goods companies is 0.500067. This means that the variables are normally distributed since there is no wide gap between the mean and standard deviation. It also has a maximum value of 1.000000 and a minimum value of 0.000000. This is because the variable is represented by 1 if the companies disclose the financial indicators and 0 if they did not disclose it.The Skewness of financial indicators is 0.160514 and Kurtosis of 1.025765.

The non-financial indicators of industrial goods companies have a mean of 0.413333 which means that industrial goods companies have an average mean disclosed in the financial statement to the extent of 0.413333 while the median is 0.000000. The maximum and minimum values of the non-financial indicators are 1.000000 and 0.000000. This is because the non-financial indicators are represented by 1 and 0 if the firms disclosed it or they did not disclose it for the period of the study.The deviation from the average mean is 0.494041 which means that the data were normally distributed since there is no wide gap between the mean and the deviation from the average mean which is the standard deviation. The skewness and kurtosis of non-financial indicators are 0.351995 and 1.123900

The performance indicators have a mean average of 0.460000 while the median is 0.000000. From the mean, the performance indicators only account an average mean of 0.460000 of all the performance indicators disclosed in the financial statement. The maximum value of the performance indicators is 1.000000 because the indicator is represented by 1 if it disclosed and with 0 if it is not disclosed in the financial statement during the period of the study. The corresponding minimum value of performance indicators is 0.000000. The deviation from the mean is 0.500067 which is closely netted. The skewness and kurtosis of performance indicator are 0.160514 and 1.025765. The firm value which is measured by Tobin's Q has an average mean of 1.129533 which its deviation from the mean of 0.307378. This shows that the firm value variable is normally distributed due to deviation from the average mean. The median is 1.000000 with corresponding maximum and minimum of 2.070000 and 0.840000. This means that industrial goods companies have a maximum value disclosed I the financial statement to the extent of 2.070000. The skewness and Kurtosis of Tobin's Q are1.76290 and 4.991279.

The total observation is 150 because it comprised of the data from 15 listed industrial goods companies in Nigeria over a period of 10 years.

Table 2 Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.133979	Prob. F(3,146)	0.9397
Obs*R-squared	0.411815	Prob. Chi-Square(3)	0.9378

Scaled explained SS	0.809419	Prob. Chi-Square(3)	0.8472

Source: Output from Eview

Breusch-Pagan was used to test for the presence of heteroscedasticity and the results showthe absence of heteroscedasticity because the prob. f-statistic which has 0.9397 and chi-square with 0.9378 has a value which is more than 5%.

Table 3 Regression Table

Variables	**Coefficient**	**t-values**	**P-values**	**VIF**
Constant	1. 129683	35.90178	0.0000	
FI	0. 094265	1.051571	0.2949	6.617506
NFI	0. 173089	2.281779	0.0241	3.737444
PI	-0. 250119	-2.689957	0.0081	7.143199
R^2	0.311581			
F-stat.	3.514332			
F-sig.	0.000021			
Hausman P-value	0.0442			

Source: Output from Eview

From the regression analysis in Table 3, multiple regression comprising of fixed and random effect was done to ascertain the effect of environmental accounting disclosure on firm value. Also, the Hausman specification test was carried to know which model is more appropriate for the study. From the result, it was gathered that the fixed effect model is more appropriate because the p-value of the Hausman specification test is 0.0442 which less than 5%. Therefore, fixed effect model is used to test the formulated hypotheses that environmental accounting disclosure has no significant effect on firm value of industrial goods companies of Nigeria.

The Variance inflation factor (VIF) which is used to test for the multicollinearity of the independent variables was also disclosed in the above table. From the result, it shows thatfinancial indicators have VIF of 6.617506 which means that the independent variables are moderately correlated. There is no multicollinearity problem in data while non-financial indicators (NFI) have a VIF of 3.73444 and performance indicators (PI) have VIF of 7.143199.

H_{01}: Environmental disclosure financial indicators index has no significant effect on firm value of industrial goods companies in Nigeria

Financial indicators have a positive insignificant effect on firm value with a p-value of 0.2949. This shows that financial indicators cannot influence the firm value of industrial goods companies in Nigeria. The coefficient of financial indicators is 0.094265 and it has t-value of 1.051571. This signifies that whether industrial goods companies disclosed their environmental accounting financial indicators or not, it cannot influence their firm value.

H_{02}: Environmental disclosure non-financial indicators index has no significant effect on firm value of industrial goods companies in Nigeria.

Furthermore, the result shows that non-financial indicators have a positive significant effect on firm value as measured by Tobin's Q with a p-value of 0.0241. This indicates that as industrial goods companies disclosed their non-financial indicators in their financial statement, it increases their firm value to the extent of 0.173089 which is the coefficient of the NFI and the t-value is 2.281779.

H_{03}: Environmental disclosure performance indicators index has no significant effect on firm value of industrial goods companies in Nigeria.

Performance indicators havea negative significant effect on firm value of industrial goods companies in Nigeria with a p-value of 0.0081. This shows that as the companies disclosed its environmental accounting performance indicators it decreases their firm valuewith a coefficient of -0.250119 and its t-value of -2.689957.

The coefficient of determination (R2) is 0.311581 which means that the environmental accounting disclosures comprising of the financial indicators, non-financial indicators as well as performance indicators explained 31% variation on the firm value of industrial goods companies in Nigeria. This, therefore, means that the model explained only 31% variation on firm value while the remaining variation is captured by other variables not captured in the model. This is probably because environmental accounting disclosure is not the variables that cause many variations on firm value of industrial goods companies in Nigeria. Despite the variation on the firm value, the model is fit with f-statistics of 0.000021.

IV. Discussion of Findings

The study ascertained the effect of environmental accounting disclosure on the firm value of industrial goods companies in Nigeria. From the result, it is evident that financial indicators have a positive insignificant effect on firm value with a p-value of 0.2949. This shows that financial indicators cannot influence the firm value of industrial goods companies in Nigeria. This signifies that whether industrial goods companies disclosed their environmental accounting financial indicators or not, it cannot influence their firm value. This finding is consistent with the findings of Malarvizhi and Ranjani (n.d), Gibson, Collins and Cosmas (n.d) but inconsistent with the study of Akino and Iredele (2014), Mohammed, Sutrisno, Prihat and Rosidi (2013), Lars and Henrik (1997), Al-Tuwaijri, Christensen and Hughes (2004), that environmental accounting disclosure has a positive significant effect on firm value. The financial indicators such as transport cost and total environmental protections expenditure have no direct link to firm value. This could be the reason why these indicators don't have a significant effect on firm value.

Non-financial indicators have a positive significant effect on firm value as measured by Tobin'sQ. This indicates that as industrial goods companies disclosed their non-financial indicators in their financial statement, it increases the company firm value. This result is consistent with the findings of Akino and Iredele (2014), Mohammed, Sutrisno, Prihat and Rosidi (2013), Lars and Henrik (1997), Al-Tuwaijri, Christensen and Hughes (2004), that environmental accounting disclosure has a positive significant effect on firm value but it contrary to the findings of Toukari and Faouzi (2014), Mohammed, Sutrisno, Prihat and Rosidi (2013) that environmental accounting disclosure affect firm value negatively.

Performance indicators have a negative significant effect on firm value of industrial goods companies in Nigeria with a p-value of 0.0081. This shows that as the companies disclosed its environmental accounting performance indicators it decreases their firm value with a coefficient of -0.250119. This finding is consistent with the findings of Daniel and Ambrose (2013), Arong, Ezegwu and Egbere (2014), Akino and Iredele (2014) that environmental accounting disclosure has a negative significant effect on environmental performance indicators. The negative effect could be as a result of disclosure effect of biodiversity, emissions, effluents and waste on the firm performance.

V. Conclusion And Recommendations

5.1 Conclusion

The information content requirement by stakeholders helps in disclosing information about organizational financial performance and report on environmental accounting. Therefore, this study examined the effect of environmental accounting disclosure on firm value of listed industrial goods companies in Nigeria. Multiple regression analysis was used to determine the effect of environmental accounting disclosure as measured by environmental accounting financial indicators, environmental accounting non-financial indicators and environmental accounting performance indicators on the firm value measured by Tobin's Q.

From the findings, the study concludes that financial indicators have a negative significant effect on firm value while non-financial performance indicators have a positive significant effect on firm value of industrial goods companies in Nigeria and performance indicators have no significant effect on firm value of industrial goods companies in Nigeria. The environmental accounting disclosures explained variation on firm value to the extent of 31% which signifies that other variables explained variation on the firm value which is not captured by the model of the study.

5.2 Recommendations

From the conclusion, the following recommendation was made:

1. As regard to non-financial indicators, the study suggests that sanctions be put in place to motivate disclosures most especially non-financial indicators since it affectsthe firm value of the industrial goods companies in Nigeria. There is a need for corporate entities to improve their environmental responsibility practices and disclose comprehensively their environmental risks, liabilities and impact on the environment. The voluntary stance of environmental reporting has often been used as a cliché for companies to under-report their effect on the environment and this is responsible for the negligence of several corporate entities with regards to environmental reporting.
2. Companies should show fines and penalties paid by the company, environmental liabilities of the company, environmental provisions, and environmental costs capitalized in the notes to the accounts in their annual reportswhich is theperformance indicators and non-financial indicators. Adherence to this may improve financial performance indicators influence on the firm value.
3. Firms should adopt uniform reporting and disclosure of environmental issues for the purpose of control and measurements of performance.

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APPENDIX

Variance Inflation Factors
Date: 12/20/18 Time: 08:15
Sample: 1 150
Included observations: 150

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
PI	0.009696	7.143199	3.857327
NFI	0.005646	3.737444	2.192634
FI	0.008982	6.617506	3.573453
C	0.001226	1.964070	NA

Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.133979	Prob. F(3,146)	0.9397
Obs*R-squared	0.411815	Prob. Chi-Square(3)	0.9378
Scaled explained SS	0.809419	Prob. Chi-Square(3)	0.8472

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 12/20/18 Time: 08:17
Sample: 1 150
Included observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.088433	0.021508	4.111617	0.0001
PI	-0.029530	0.060477	-0.488286	0.6261
NFI	0.023523	0.046149	0.509721	0.6110
FI	0.014323	0.058209	0.246066	0.8060

R-squared	0.002745	Mean dependent var	0.091160
Adjusted R-squared	-0.017746	S.D. dependent var	0.186315
S.E. of regression	0.187961	Akaike info criterion	-0.478864
Sum squared resid	5.158061	Schwarz criterion	-0.398580
Log likelihood	39.91481	Hannan-Quinn criter.	-0.446247
F-statistic	0.133979	Durbin-Watson stat	1.326685
Prob(F-statistic)	0.939673		

Fixed Effect Regression

Dependent Variable: TQ
Method: Panel Least Squares
Date: 12/20/18 Time: 08:03
Sample: 2007 2016
Periods included: 10
Cross-sections included: 15
Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FI	0.094265	0.089642	1.051571	0.2949
NFI	0.173089	0.075857	2.281779	0.0241
PI	-0.250119	0.092982	-2.689957	0.0081

C	1.129683	0.031466	35.90178	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.311581	Mean dependent var	1.129533
Adjusted R-squared	0.222921	S.D. dependent var	0.307378
S.E. of regression	0.270960	Akaike info criterion	0.338474
Sum squared resid	9.691336	Schwarz criterion	0.699750
Log likelihood	-7.385558	Hannan-Quinn criter.	0.485249
F-statistic	3.514332	Durbin-Watson stat	1.290825
Prob(F-statistic)	0.000021		

Random EffectRegression

Dependent Variable: TQ
Method: Panel EGLS (Cross-section random effects)
Date: 12/20/18 Time: 08:04
Sample: 2007 2016
Periods included: 10
Cross-sections included: 15
Total panel (balanced) observations: 150
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FI	0.105967	0.087608	1.209567	0.2284
NFI	0.142565	0.072430	1.968333	0.0509
PI	-0.224466	0.090987	-2.467015	0.0148
C	1.125116	0.044853	25.08453	0.0000

Effects Specification

	S.D.	Rho
Cross-section random	0.124395	0.1741
Idiosyncratic random	0.270960	0.8259

Weighted Statistics

R-squared	0.048301	Mean dependent var	0.640742
Adjusted R-squared	0.028746	S.D. dependent var	0.278616
S.E. of regression	0.274582	Sum squared resid	11.00771
F-statistic	2.469960	Durbin-Watson stat	1.217267
Prob(F-statistic)	0.064269		

Unweighted Statistics

R-squared	0.023781	Mean dependent var	1.129533
Sum squared resid	13.74289	Durbin-Watson stat	1.049294

Hausman specification

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.929574	3	0.0442

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
FI	0.094265	0.105967	0.000361	0.5378
NFI	0.173089	0.142565	0.000508	0.1758
PI	-0.250119	-0.224466	0.000367	0.1806

Cross-section random effects test equation:
Dependent Variable: TQ
Method: Panel Least Squares
Date: 12/20/18 Time: 08:05
Sample: 2007 2016
Periods included: 10
Cross-sections included: 15
Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.129683	0.031466	35.90178	0.0000
FI	0.094265	0.089642	1.051571	0.2949
NFI	0.173089	0.075857	2.281779	0.0241
PI	-0.250119	0.092982	-2.689957	0.0081

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.311581	Mean dependent var	1.129533
Adjusted R-squared	0.222921	S.D. dependent var	0.307378
S.E. of regression	0.270960	Akaike info criterion	0.338474
Sum squared resid	9.691336	Schwarz criterion	0.699750
Log likelihood	-7.385558	Hannan-Quinn criter.	0.485249
F-statistic	3.514332	Durbin-Watson stat	1.290825
Prob(F-statistic)	0.000021		

DATA

COMPANY				
ASHAKA CEMENT	FINANCIAL INDICATORS (FI)	NON-FINANCIAL INDICATORS (NFI)	PERFORMANCE INDICATORS (PI)	TOBINS Q
2007	0	0	0	0.92
2008	0	0	0	1.09
2009	0	0	0	1.37
2010	0	0	0	0.96
2011	0	0	1	1
2012	1	1	1	1

2013	1	1	1	0.93
2014	1	1	1	0.96
2015	1	1	1	0.98
2016	1	1	1	0.94
AUSTIN LAZ & COM/ 2007	0	0	0	1.91
2008	0	0	0	1.9
2009	0	0	0	1.08
2010	0	0	0	1.77
2011	0	0	0	1
2012	1	0	1	0.88
2013	1	0	1	0.88
2014	1	0	1	0.86
2015	1	1	1	0.9
2016	1	1	1	0.91
AVON CROWN/ 2007	0	0	0	0.89
2008	0	0	0	1.88
2009	0	0	0	1.63
2010	0	0	0	1.46
2011	0	1	1	0.96
2012	1	1	1	1.04
2013	1	1	1	1.05
2014	1	1	1	1.97
2015	1	1	1	1.02
2016	1	1	1	1.02
BERGER PAINTS 2007	0	0	0	1.95
2008	0	0	0	0.91
2009	0	0	0	0.9
2010	0	0	1	1.05
2011	1	0	0	1.51
2012	1	1	1	1.86
2013	1	1	1	1.89
2014	1	1	1	1.98
2015	1	1	1	1.92
2016	1	1	1	1.93
BETA GLASS 2007	0	0	0	0.92
2008	0	0	0	0.91
2009	0	0	0	0.89
2010	0	0	0	0.87
2011	0	1	0	1.22
2012	1	1	0	1.47
2013	1	1	1	0.96
2014	1	1	1	1.09
2015	1	1	1	1.18
2016	1	1	1	1.11
CAP PLC 2007	0	0	0	1.21
2008	0	0	0	1.21
2009	0	0	0	1.15
2010	0	0	0	1.04
2011	0	0	0	1.06
2012	0	1	0	1.03
2013	1	1	0	1.22
2014	1	1	1	0.98
2015	1	1	1	0.93
2016	1	1	1	1.01
CCNN 2007	0	0	0	0.95
2008	0	0	0	0.95
2009	0	0	0	0.94
2010	0	0	0	0.93
2011	1	0	1	0.93
2012	1	0	1	0.96
2013	1	1	1	1.46
2014	1	1	1	2.07
2015	1	1	1	1.46
2016	1	1	1	1.23
CUTIX PLC/ 2007	0	0	0	0.96
2008	0	0	0	1.01
2009	0	0	0	0.94
2010	0	0	0	0.95
2011	0	0	0	0.98

2012	1	0	1	0.96
2013	1	0	1	0.95
2014	1	1	1	0.92
2015	1	1	1	1.06
2016	1	1	1	1.22
DANGOTE/ 2007	0	0	0	1.15
2008	0	0	0	0.94
2009	0	0	0	0.9
2010	0	0	0	0.96
2011	0	0	1	0.92
2012	0	1	1	0.88
2013	1	1	1	0.86
2014	1	1	1	1.18
2015	1	1	1	1.31
2016	1	1	1	0.98
DN MEYER 2007	0	0	0	1.05
2008	0	0	0	1
2009	0	0	0	0.96
2010	0	0	0	0.98
2011	0	0	0	1
2012	0	1	0	0.95
2013	0	1	1	0.92
2014	1	1	1	0.92
2015	1	1	1	1.04
2016	1	1	1	1.47
FIRST ALLUMINIUM 2007	0	0	0	1.08
2008	0	0	0	1.03
2009	0	0	0	0.98
2010	0	0	0	0.91
2011	0	0	0	0.91
2012	0	0	0	0.98
2013	0	0	0	0.96
2014	0	0	0	0.91
2015	1	1	1	0.84
2016	1	1	1	1.09
GRIEF NIGERIA 2007	0	0	0	1.9
2008	0	0	0	1.85
2009	0	0	0	1.29
2010	0	0	0	0.99
2011	0	0	0	1
2012	0	0	0	1.02
2013	1	0	0	0.93
2014	1	0	1	0.98
2015	1	0	1	0.94
2016	1	0	1	0.98
LAFARGE CEMENT 2007	0	0	0	1.2
2008	0	0	0	1.32
2009	0	0	0	0.97
2010	0	1	0	1
2011	0	1	0	1.07
2012	1	1	1	1
2013	1	1	1	1.07
2014	1	1	1	1.07
2015	1	1	1	1.01
2016	1	1	1	0.96
PAINTS AND COATINGS 2007	0	0	0	0.95
2008	0	0	0	0.96
2009	0	0	0	0.95
2010	0	0	0	0.92
2011	0	0	0	1.09
2012	1	0	0	1.37
2013	1	0	0	0.96
2014	1	1	1	1
2015	1	1	1	0.94
2016	1	1	1	0.95
SANTEX & PORLAND 2007	0	0	0	0.98
2008	0	0	0	0.96

2009	0	0	0	0.95
2010	0	0	0	1.46
2011	0	0	0	2.07
2012	1	0	1	1.46
2013	1	1	1	1.23
2014	1	1	1	1.23
2015	1	1	1	1
2016	1	1	1	1.04

List of Industrial goods companies

i. African paints Nig. PLC.,
ii. Ashaka cement PLC.,
iii. Austin Laz & Company Plc.,
iv. Avon Crown Caps and Containers.,
v. Berger Paints Plc.,
vi. Beta Glass co plc.,
vii. Cap plc.,
viii. Cement Company of Northern Nigeria (CCNN) plc.,
ix. Chemical and Allied Product Company PLC,
x. Cutix plc.,
xi. Dangote cement firms,
xii. Dn Meyer plc.,
xiii. First Aluminium Nig. Plc.,
xiv. Greif Nigeria PL,
xv. Lafarge African plc.,
xvi. Paints and Coatings manufacturing plc.,
xvii. Portland paints and products Nigeria plc., and
xviii. Premier Paints PLC.

Oyedokun Godwin Emmanuel. "Environmental Accounting Disclosure and Firm Value of Industrial Goods Companies In Nigeria." IOSR Journal of Economics and Finance (IOSR-JEF) , vol. 10, no. 1, 2019, pp. 07-27.