

Corporate environmental disclosures and market value of quoted companies in Nigeria

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Keywords

Disclosures, Environment, Nigeria.

Abstract

This paper examined the impact of environmental information disclosures on Market Value of fifty quoted companies in Nigeria for the period 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. The result of the descriptive analysis showed that the mean and median values are within the minimum values and the standard deviation is low which indicated that the deviation of the actual data from their mean value is very low. Our empirical analysis revealed 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) have 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 recommends that business should take caution in areas where environmental activities impacts negatively on the Value of the firm and also invest in areas that enhance value for the firm.

1. Introduction

The state of world's environment and the impact of mankind on the ecology of the world have led to increased public concern and scrutiny of the operations and performance of organizations. Globally, corporations are expected to include environmental concerns in business operations and in interaction with stakeholders. As a result, firms can no longer ignore the problems of the society in which they operate. This has thus instituted a social contract between organizations and the environment thereby making environmental responsibility a corporate dictate.

Corporate environmental disclosures can be defined as an umbrella term that describes various means by which companies disclose information on their environmental activities to users of financial statements (Alok, Nikhil and Bhagaban, 2008). Disclosures is necessitated because of the importance of the environment and the destructive impacts of firms' activities on the environment. This has caused the emergence of many global institutions enunciating varying norms that guide human interaction with the environment; the United Nations' Protocols and Agreement on Environment, the Kyoto Protocol to the United Nations Framework on Climate Change with some of its offshoot, the EU Directive on Environmental Issues. All these have sought to provide a legal foundation for environmental disclosures (Enahoro, 2009). In Nigeria particularly, the birth of agencies such as the Federal Environmental Protection Agency (FEPA) in 1988 and the National Environmental Standards and Regulation Enforcement Agency (NESREA) in 2007 marked a new era of environmental regulations for the nation. NESREA requires all companies whose

activities have significant impact on the environment to obtain operational license and permit as a way of complying with the environmental regulations of NESREA.

A large body of accounting literature explores the value relevance of non-financial information and the emerging position is that financial information such as cash flows and earnings alone do not explain the variation in stock returns. It has been argued that non-financial information such as environmental disclosures have an unbooked - liability component that is assessed by the capital market (Barth and McNichols, 1994; Hughes, 2000; Amir and Lev (1996). Current debate on how environmental disclosure impacts the market value of firms is basically divided into two schools namely; the cost concerned school and the value creation school. The cost-concerned school argues that environmental investments and high environmental disclosure represent only increased costs, resulting in decreased earnings and lower market value. Consequently, the relationship between environmental disclosure and market value is expected to be negative (Jaggi and Freedman, 1992; Walley and Whitehead, 1994; Lars, Henrik & Siv (2005). Value creation school regards environmental efforts as a way of increasing competitive advantage and improve financial returns to the investors, the relationship between environmental disclosure and market value in this regard is expected to be positive (Konar and Cohen, 2000).

In Nigeria, studies on environmental disclosures have sought to establish a relationship between environmental disclosure and financial performance, measured through profitability (Collins, 2009; Oba et al 2012; Uwuigbe et al 2012). To the best of our knowledge, none of these studies have considered the forward-looking effect and overall and long term impact of environmental performance on the company and this is the main emphasis of this study.

2. Theoretical Framework and Review of Literature

Several studies in developed and developing countries have justified the need for companies to disclose the impact of their activities on the environment using various theories such as stakeholder theory. The basic proposition of the stakeholder theory is that a firm's success is dependent upon the successful management of all the relationships that a firm has with its stakeholders. This theory according to Watts and Zimmerman (1978) assumes that disclosure on environmental information by an organization is as a result of the pressure from stakeholders such as communities, customers, employees and suppliers. The stakeholder theory holds that companies are accountable for their stewardship over the resources entrusted to them by a coalition of these stakeholders (Chan, 1996).

The stakeholder theory asserts that corporation's continued existence requires the support of the stakeholders and their approval must be sought and the activities of the corporation adjusted to gain that approval (Chan, 1996). This study is hinged on the stakeholder theory because according to Clarkson (1995) corporation and their managers manage their relationships with their stakeholders.

Legitimacy theory argues that organizations seek to ensure that they operate within the bounds and norms of society (Gray, Kouhy and Lavers, 1995; Tilt, 1999; Suchman, 1995). It entails conformity of an organization with the value of the society within which it functions (Deegan, 2002), and Social Contract theory which is developed on the preposition that there exists contract between business and wider society, whereby business agrees to perform various societal desired actions in return for approval of its objectives, other rewards and its ultimate survival (Guthrie and Parker, 1989). By utilizing stakeholder

theory, we conclude that firm's success is dependent upon the successful management of all the relationships that a company has with its stakeholders.

Corporate Environmental Disclosures (CED) is in itself not a measurable variable and this has led to the construction of the Corporate Environmental Performance (CEP) concept. CEP therefore operationalizes CED through a number of measurable variables which can be used in testing the CED/Firm Market Value relationship. Specifically, Collins (2009) identified three broad classes of measurable variables; employee health and safety (EHS), waste management (WM) and Community development (CD). Other measurable variables under the scope of CED include employee welfare and social benefit (EWSB), and Donation and charitable contributions (DCC) (Yusuf, 2011). Oba (2012), investigated whether three Corporate Social Responsibility (CRS) variables - Community Social Responsibility (CCRS), Human Resource Management (HRM) and Charitable Contribution (CC) have significant impact on quoted conglomerates' market value as measured by Tobin's Equity Q. Duke and Kankpang (2013) used Waste Management Cost (WNC); Pollution Abatement cost (PAC); Social Cost (SC); and Fines and Penalties (FP). However, the variables used in this present study are based on the GRI performance indicators namely; Environmental pollution and control policy (EPC), Energy policy (ENP), Impact on Biodiversity (BIO), Waste Management Cost (WSM), Award Received for installing Environmental Management System (AWR), Environmental Research and Development cost (ERD) and Cost of compliance with environmental Laws (CEL) and this is because fines and penalties often arise or become applicable when firms fail to act timely on and/or report promptly on their social responsibility (Deegan & Gordon, 1996)

Market Value of Firm

Laabs (2012) stated that methods to be used for valuation can be broadly classified into earnings based approach, asset based approach and market based approach. The earnings based approach is more appropriate in case of valuation for going concern and it is also applicable in an industry where human knowledge and creativity appears more relevant in comparison to physical assets in value creation. This approach values a business by capitalizing its earnings. Among the main methods under this approach are the discounted cash flow method and the sales multiple methods. The asset based approach implies that valuation of net assets is calculated with reference to the historical cost of the assets owned by the company. The market based approach adopts the market price method. It evaluates the value on the basis of prices quoted on the stock exchange. It is the current quoted price at which investors buy or sell a share of common stock or a bond at a given time often referred to as market capitalization. In the context of securities, market value is often different from book value because the market value takes into account future growth potential. Regulatory bodies have considered market value as one of the very important basis of determining firm value. This method is basically used for this study.

Corporate Environmental Disclosures and Market Value

Environmental Pollution and Control policy and Market Value: Dasgupta, Laplante, and Mamingi (1998) posit that Capital markets do respond to information about a firm's environmental performance and if properly informed, may provide appropriate financial and reputational incentives for pollution control. Perhaps more resources should be used for disseminating firm-specific information about environmental performance to allow all stakeholders to make informed decisions. They are of the opinion that capital markets may react negatively to news of adverse environmental incidents (such as spills or violations of

permits) as well as positively to the announcement that a firm is using cleaner technologies. The authors assess whether capital markets in Argentina, Chile, Mexico, and the Philippines react to the announcement of firm-specific environmental news. They show that: Capital markets react positively (the firms' market value increases) to the announcement of rewards and explicit recognition of superior environmental performance. They react negatively (the firms' value decreases) to citizens' complaints. The impact of firm-specific environmental news on market value may work its way through various channels: a high level of pollution intensity may signal to investors the inefficiency of the firm's production process; it may invite stricter scrutiny by environmental groups and/or facility neighbours; it may result in the loss of reputation, goodwill, etc. On the other hand, the announcement of a good environmental performance or the investment in cleaner technologies may have the opposite effect: lesser scrutiny by regulators and communities (including the financial community), greater access to international markets.

Dezhu, Shasha and Dongmin (2013) studied the impact of energy-saving efforts on firm value, using the carbon emission rights trading scheme (CERTS) of China as an exogenous shock. The results showed that the CERTS increase the market value of energy-related firms; Moreover, the energy-saving efforts of firms further influence their market value and investor reaction. Energy-related firms improve their market value and gain benefits by strengthening their energy-saving activities. The paper offered an important policy implication that the Government should enact appropriate policies to improve the energy-saving activities of firms, especially those in the energy industry.

International Finance Corporation (IFC) published that businesses face growing pressure from outside investors, customers, trading partners, shareholders, governments, NGOs and the public to identify and report on their social and environmental performance, and biodiversity is one of the key areas of interest. Positive performance on biodiversity can enhance a company's standing among outside stakeholders and create real business value for the company. At the same time, poor performance or negative impacts to biodiversity can seriously undermine corporate value and affect a company's ability to operate and survive in today's market. As government regulation and societal expectations change, the risks to business from biodiversity issues will likely increase. According to IFC (2014), there are six key factors that drive the argument for proactively managing biodiversity in business activities; Securing a license to operate, Maintaining access to capital, Reducing operating costs, Enhancing reputation and brand, Improving productivity and staff morale, Increasing market access. Businesses can access three types of markets to capitalize on opportunities that arise from business activities which promote biodiversity protection and maintenance; Markets for sustainably produced goods, Consumer markets for non-consumptive uses of biodiversity, New markets for ecosystem services.

Waste is part of the economy – it is a by-product of economic activity, by businesses, government and households. Waste is also an input to economic activity – whether through material or energy recovery (Department for Environment, Food and Rural Affairs, Defra,2011). The management of that waste has economic implications – for productivity, government expenditure, and, of course, the environment. Firms' decisions over how to manage waste impact on their profitability. Where the benefits outweigh the costs, firms can reduce their overall costs and improve productivity by reducing the use of expensive raw materials. Equally, costs can be reduced by optimising the management of waste which arises. The decisions of consumers in demanding goods and services which lead to waste impact not only on the environment, but also on the level of government spending required

by local authorities to collect and manage household waste. As well as the economy-wide impacts of waste, there are microeconomic themes around the formation of waste policy. Waste policy is a key part of ensuring that raw materials are used efficiently. However, failure to fully account for their value in economic decisions means that these resources are over-consumed. This, in turn, poses risks to long-term economic growth

Award Received (Environmental Certification) and Market Value : One of the ways of limiting environmental liabilities resulting from the utilization of the resources of the environment for wealth creation is through the improvement of environmental performance of corporation. Therefore, ISO 14001 Environmental management systems provide a framework for achieving this goal. (Mmom, 2006). EMS provides the structure by which specific activities related to environmental protection and compliance can be effectively and efficiently carried out. It enables an organization to reduce its environmental impact, and increase its operating efficiency. In other words, implementing environmental management system that would conform to the ISO 14001 series would help firms integrate environmental values into their business operations and reduce liabilities. ISO 14001 is the internationally recognized standard for the environmental management of business. It prescribes controls for those activities that have effect on the environment and implementing EMS is a way to discovering and controlling the effect a company has on the environment.

A company which has an environmental management system in place following a successful audit by an accredited certification body will be issued with a certificate of registration to ISO 14001. This demonstrates that the organization is committed to environmental issues and is prepared to work towards improving the environment. The resultant effect is that it gives a competitive edge to the company and enhances its corporate image in the eyes of the customers, employees and shareholders. Since companies' value is enhanced through environmental certifications there should be deliberate effort to implement ISO 14001 EMS to enhance the value of quoted companies in Nigeria.

Environmental Research and Development Cost and Market Value :The goal of environmental research and development is to better understand geological, atmospheric, and environmental phenomena as well as to contribute substantially to the nationwide effort to clean up the environment and come up with better ways to design and manufacture effective products. The continued dedication of researchers from institutions is helping to make environmentally clean and economically competitive. R&D promotes the reduction of the environmental impact of products throughout the product lifecycle such as pursuing solutions to global warming, recycling of resource and conservation of ecosystems. It hopes to contribute to the preservation of the earth's environment and achievement of a sustainable society. Investing a good amount of capital into research and development often leads to future growth and improvement of processes.

Cost of Compliance with Environmental Laws and Market Value:It is the monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations. Fines and penalties often arise or become applicable when firms fail to act timely on and/or report promptly on their environmental responsibility (Deegan & Gordon, 1996).

These environmental disclosures are the extra-financial information on issues about the future prospects of a company that are not directly quantifiable. Therefore, this study proposes that the market value of companies will reflect non-financial environmental information.

Prior Research

The large proportion of existing literature on environmental disclosure has focused on the relationship that exists between this phenomenon and financial performance. Cohen and Konar (1997) examined the relationship between environmental performance and financial performance. The result showed that profitable firms are more environmentally responsible because they have superior financial performance. Similar result was reported by Russo and Fouts (1997), they also found a positive relation between firm performance, as measured by return on assets and environmental rating. In the same vein, Belkaouri (1976) examined the information content of pollution control disclosures. He found a positive performance between economic performance and environmental performance. Rockness, Schlachter and Rockness (1986) conducted a research on hazardous waste disposal in the chemical industry (environmental performance) and the return on equity as a measure of financial performance. In their study they found positive relations; companies with higher financial performance are those who have smaller amounts of chemical waste disposal. Bragdon and Marlin (1972) also produced a positive relation between profitability and environmental performance ratings for pulp and paper firms.

In a study conducted by Freedman and Jaggi (1995), in which environmental disclosure was measured against six accounting ratios to measure financial performance, the result showed that there was no long term association between pollution performance and financial performance in the pulp and paper industry. However, for very large firms with poor financial performance the pollution disclosure are more detailed. Clarkson et al (2006) investigated proactive corporate environmental policies and financial performance. Only firms with sufficient financial resources and management capabilities can pursue proactive environmental strategy. These firms will enjoy better financial performance subsequently. In 2007, Zhang and Stern concluded that financial performance has a small positive impact on current environmental performance. Financially well-performed firms tend to invest more in environmental activities.

Among the literatures more relevant to the study currently being conducted include; Lars et al (2005); Natalia et al (2009), they investigated the effect of environmental information on the market value of listed companies in Sweden using a residual income valuation model. One of the result showed that environmental responsibility as disclosed by sampled companies has value relevance; since it is expected to affect the future earnings of the listed companies (Natalia et al 2009). The findings have implications for companies that pollute the environment. This research is carried out in line with the work of Lars et al (2005) and Natalia et al (2009). In line with their study, Clarkson and Rickardson (2008) studied the effect of environmental investment on investment decision. The result suggests that environmental information disclosure influences investment allocation decisions. This imply that companies that are apathetic to their environmental responsibility might experience eventual crashes on their stock prices if their investors are rational in considering the future value of the firm based on its present state of environmental responsibility.

In Nigeria, a large portion of the literature are based on the extent or level of environmental disclosures (Uwuigbe and Jimoh, 2012; Appah, 2011; Owolabi, 2008). (Collins, 2009) examined environmental responsibility and firm performance. In his study of sixty Nigerian manufacturing firms observed that investment in social and environmental responsibility are related to improved return on total assets. In line with this, (Oba et al, 2012) investigated the value relevance of environmental responsibility information disclosure in Nigeria. The study examined the association between environmental

responsibility information disclosure and financial performance (Return on capital employed). It found a positive relationship. Also, Duke and Kankpang (2013) examined the implications of corporate social responsibility for performance of Nigerian firms using ROCE to measure performance and relationship was positive.

To the best of our knowledge, no study in Nigeria has examined the relationship between environmental disclosure and market value of firms using Tobin’s Q approach and focusing purely on non-financial variables. This gap in Nigeria is what this study intends to fill.

3. Data and Methodology

The study employed secondary data. Fifty firms quoted on the Nigerian Stock Exchange (NSE) were purposively selected for analysis based on the availability of environmental disclosures in their annual reports. Financial data on Market value (Tobin’s q) and Firm size (Total Assets) were collected from sampled companies Annual Financial Reports as released by the Nigerian Stock Exchange over the period 2003 – 2011. Also, non financial data were obtained by developing a corporate environmental disclosure index of seven (7) established environmental checklist instruments namely; Environmental pollution and control policy (EPC), Energy policy (ENP), Impact on Biodiversity (BIO), Waste Management Cost (WSM), Award Received for installing Environmental Management System (AWR), Environmental Research and Development cost (ERD) and Cost of compliance with environmental Laws (CEL) We employ a dichotomous rating system of assigning ‘1’ if item is disclosed and ‘0’ if it is not disclosed. A firm could score a maximum of 7 points and a minimum of 0.

Model Specification

Model 1

The general model specification is represented by the following equation:

$$MV_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 Z_{i,t} + u_{i,t} \text{-----} 1$$

Model 2

The specific model for this study is as follows:

$$MV_{i,t} = \beta_0 + \beta_1 \sum CED_{i,t} + \beta_2 SIZ_{i,t} + u_{i,t} \text{-----} 2$$

Where:

MV = Market value of company

CED = Corporate environmental disclosure (In aggregate)

U = error term

The aggregate of the indices for measuring environmental disclosure was regressed against the market value of companies to determine the impact of non-accounting information disclosure on the market value of companies.

In turn, we also examined the impact of each of the environmental disclosure variable on market value of companies to determine the contribution of each of them to the result obtained in equation three. The model for this is stated as follows:

Model 3

$$MV_{i,t} = \beta_0 + \beta_1 EPC_{i,t} + \beta_2 ENP_{i,t} + \beta_3 BIO_{i,t} + \beta_4 WSM_{i,t} + \beta_5 AWR_{i,t} + \beta_6 ERD_{i,t} + \beta_7 CEL_{i,t} + \beta_8 SIZ_{i,t} + e_{i,t} \text{-----} 3$$

The above Environmental Responsibility Performance model measures the effect of the different environmental responsibility related costs on the overall Market Value of firms.

Where:

$$MV = (\text{Tobin's } Q) = \frac{\text{Market value} + \text{Total liabilities}}{\text{Total Assets}}$$

EPC = Environmental pollution and control

ENP = Energy policies

BIO = Material recycling and conservation of resources (Biodiversity)

WSM = Waste management

AWR = Award receive e.g 1S014001

ERD = Environmental research and development

CEL= Compliance with environmental laws and Regulation

SIZ = Size of the firm

e = error term

4. Analysis & Findings

Descriptive statistics of the data series

It provides information about sample statistics such as mean, median, maximum and minimum value, and the distribution of the sample measured by the skewness, kurtosis and the Jarque-Bera statistics for 50 firms given 413 observations

	MV	EPC	ENP	BIO	WSM	AWR	ERD	CEL	SIZ
Mean	1.473269	0.755448	0.283293	0.653753	0.639225	0.128329	0.384988	0.031477	19497745
Median	1.160000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	4896443.
Maximum	12.57000	3.000000	3.000000	3.000000	3.000000	3.000000	3.000000	3.000000	2.15E+08
Minimum	0.120000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	99836.00
Std. Dev.	1.057032	0.779439	0.630639	0.977274	0.964471	0.452068	0.762894	0.234162	32616394
Skewness	4.250301	0.732201	2.251313	1.220778	1.227552	3.674947	2.049629	8.867943	2.704859
Kurtosis	35.93874	2.843013	7.324351	3.135291	3.151295	16.01178	6.421444	91.41863	11.11195
Jarque-Bera	19913.84	37.32687	670.6715	102.8972	104.1178	3843.090	490.6129	139945.3	1635.975
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	608.4600	312.0000	117.0000	270.0000	264.0000	53.00000	159.0000	13.00000	8.05E+09
Sum Sq. Dev.	460.3341	250.3002	163.8547	393.4867	383.2446	84.19855	239.7869	22.59080	4.38E+17
Observations	413	413	413	413	413	413	413	413	413
Cross sections	50	50	50	50	50	50	50	50	50

Table 1: Descriptive Statistics

Table.1 shows that all the series display a high level of consistency being that their mean and median values are within the maximum and minimum values of the series. Also

the deviation of the actual data from their mean value are very low, this is indicated by the relatively low value of the standard deviations. The statistics show that the series are positively skewed meaning that the distribution has a long right tail and in terms of the peakness or flatness of the distribution of the series measured by the kurtosis, the table shows that the series are peaked relative to the normal. The probability that the Jarque-Bera statistics exceeds the observed value is low for all the series.

Correlation Matrix

Whereas the descriptive output tells us about each set of data (i.e., the mean, standard deviation, and number of values for each variable), the correlation matrix in the output tells us how the variables are related.

	MV	EPC	ENP	BIO	WSM	AWR	ERD	CEL	SIZ
MV	1.0000								
EPC	0.118	1.0000							
ENP	0.103	0.424	1.0000						
BIO	0.226	0.315	0.704	1.0000					
WSM	0.188	0.338	0.712	0.993	1.0000				
AWR	-0.007	0.254	0.568	0.602	0.606	1.0000			
ERD	-0.064	0.361	0.562	0.428	0.444	0.457	1.0000		
CEL	-0.038	-0.119	0.036	0.237	0.238	0.110	0.060	1.0000	
SIZ	0.070	-0.159	0.263	0.380	0.391	0.216	0.341	0.066	1.0000

Table 2 Correlation Matrix

Table 2 shows that market value positively correlate with corporate environmental disclosure variables with the exception of AWR, ERD and CEL. It provides evidence that environmental performance will affect market value of firms. However, the relationship is not significant and the same holds for all the relationships in the series.

The negative relationship between market value (MV) and CEL shows that payment of fines and other environmental compliance measures has cost implication which reduces firm value, and this supports the position of the cost-concerned school. The negative relationship between EPC and CEL is expected as performance in the aspect of pollution control will reduce the cost of compliance with environmental laws such as fines. Furthermore, the size of the firm does not affect performance in terms of pollution control as this is evidenced from the relationship between EPC and SIZ. All other relationships in the series show positive results indicating that environmental responsibility in one aspect influence other areas even though many of such relationship is not significant.

For a bivariate correlation, the correlation of each variable with all the explanatory variable is not captured. The study suggests the need for a more reliable measure of relationship which provides the explanatory power of the independent variables over the dependent variable using a multivariate model estimated using fixed effect method.

CED and Market value - OLS Results

This subsection discusses the OLS results in relation to the impact of CED on market value of quoted companies in Nigeria. The study shows that the CED proxies have

significant impact on quoted companies' market value. The regression results are presented in Table 3

Variables	Estimated Coefficient	Standards error	t-value	Sig.
Constant	0.962	0.676	1.422	0.155
CED	0.065	0.033	1.974	0.049
Log(SIZ)	0.024	0.045	0.542	0.588

Table 3: Regression Result of Impact of Corporate Environmental Disclosure on Market Value of companies (Model 2)

R	R Square	Adjusted Square	R	Standard Error of the estimate	Durbin Watson
0.68	0.47	0.40		0.8183	1.088

Table 4: Model Summary (Model 3)

The results of OLS in relation to the impact of environmental disclosure on the Market value of Nigerian Quoted companies based on Fixed effect Model are discussed. Table 3 relates environmental disclosure variables to the Market Value of Quoted companies. From the result, CED has a positive significant impact on Market Value ($t = 1.97$, $p = 0.04$) at 5% level of significance. Firm size (denoted by log of total assets) has also been found as having non-significant positive impact on the market value - CED relationship., it offers support to the works of Cho and Pucik (2005) and Xueming and Bhattacharya (2006) that the size of a firm influences the relationship between CED and Market Value.

The combined impact of the variables of environmental disclosure and firm size on the Market Value of Nigerian quoted companies as indicated in Table 4 shows that the relationship between the dependent and independent variables of the study is 68% which implies strong positive relationship and statistically significant at 5% level. While the coefficient of determination R^2 of 0.47 shows that environmental disclosure in Nigerian quoted companies account for 47% of their market value and the remaining 53% is covered by other factors included in the disturbance variable e . The overall impact of corporate environmental disclosure on market value of quoted companies is significant as ($F.Sig = 0.0000$). The Durbin - Watson Statistic of 1.08 based on the decision rule, since $dL < d^* < du$, indicate that the test is inconclusive.

The result of model 3 examined the impact of each of the environmental disclosure variables on market value and we obtain:

$$MV_{i,t} = 0.491 - 0.240(EPC) + 0.702(BIO) - 0.272(WSM) + 0.027(AWR) + 0.100(ENP) - 0.138(CEL) + 0.316(ERD) + 0.057(SIZ)$$

6. Discussion and Summary

The study examined the impact of seven variables for measuring different aspects of environmental performance by firms. These variables were regressed on Market Value in aggregate and in part. Four of these variables namely; Energy policies, Biodiversity, Award received such as ISO 14001, Environmental research and development contribute positively to the market value of the firm. Award Received (AWR) in form of environmental certification such as ISO 14001, Investment in Environmental Research and Development (ERD) brings about new ideas and innovations which will lead to positive value for the firm.

Firms' commitment to reducing the negative impact of companies activities on Biodiversity (BIO) and cost-saving Energy policy (ENP) will also enhance firm value. To the extent of these variables alone, we discovered that environmental disclosure have positive impact on the market value of quoted companies and this lends support to the work of (Konar and Cohen, 2000; Natalia et al 2009). They regard environmental efforts as a way of increasing competitive advantage and improve financial returns to the investors. As a result, there is a positive relationship between environmental disclosures and Market Value. However, this study has shown that such impact is not significant except when a firm invests in Environmental Research and Development (ERD).

Conversely, Investment in Environmental Pollution and Control (EPC), Waste Management (WSM) and Compliance with Environmental laws and Regulations (CEL) will have value decreasing effect on the market value of the firm. This is because these variables represent only increased costs, resulting in decreased earnings and lower market value. This supports the work of (Jaggi and Freedman, 1992; Walley and Whitehead, 1994; Lars et al 2005), they argue that environmental investments and high environmental performance represent only increased costs, resulting in decreased earnings and lower Market Value. WSM is not in congruent with the a priori expectation indicates that the waste policy adopted by the companies sampled is not efficient.

The aggregate of the variables considered as CED has a significant positive impact at this shows the predictive power of corporate environmental disclosures (CED) on the Market Value of firms. The study recommends that since investment in Environmental Pollution and Control (EPC), Waste Management (WSM) and Cost of compliance with Environmental laws and Regulations (CEL) have value decreasing effect on the market value of the firm because these variables represent only increased costs, resulting in decreased earnings and lower market value, they are to serve as a caution for companies; they should comply with environmental laws to reduce the cost of fines and litigations. Also, efficient waste management and pollution control system is recommended. Furthermore, the management of quoted companies should increase their investment in environmental expenses in the areas of Energy policies (ENP) adopted, ensure positive impact on Biodiversity (BIO), commitment to environmental management system so as to receive ISO14001 Award (AWR) and, Environmental research and development (ERD) since these indices contribute positively to firm value.

However, firms should be willing to invest in Environmental research and development (ERD) because it has more significant impact on market value. The results of this study might have been limited due to the exclusion of financial variables in determining market value of companies and the inability to include the data of all quoted companies due to unavailability of report.

7. Direction for Future research

Further research should incorporate financial variables such as earnings and cash flows in determining the market value of companies. The relevance of stand alone environmental report in today's corporate reporting can also be examined. Finally, determinants of the extent of environmental disclosure and the impact of environmental disclosure on firms' cost of capital are suggested for further studies.

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