

Environmental Accounting Performance and Corporate Valuation of Manufacturing Companies in the Niger Delta - Nigeria

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Abstract

This study examines the impact of Environmental Accounting Performance on the value of Nigerian Manufacturing Companies located in the Niger Delta region of Nigeria, between the period 2011-2018. Using secondary data sourced from seven Companies' environmental performance rating from Bloomberg and CSR Hub, the study made use of Ordinary Least Square (OLS) Regression analysis performed via EViews 9.5 for the analysis of the data collected. Findings from the analysis show that the companies' environmental accounting performance in pollution management, resource management, environmental policy and reporting, and energy and climate change all have positive and significant effects on the market share prices of the sampled manufacturing firms, with firms having higher accounting performance reaping higher market values than firms with low environmental accounting performance. It was recommended that companies should have higher environmental investments and performance in order to reap higher values.

Keywords: *Environmental Accounting Performance, Pollution Management, Resource Management, Environmental Policy and Reporting, Energy and Climate Change, Stock Prices.*

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I. INTRODUCTION

Owing to the emergence of various mega-developments such as heightening societal concerns about ecological deterioration and regulators' tightening environmental control over business activities, firms today are under increasing pressure to act in an environmentally oriented manner (Banerjee, Iyer, & Kashyap, 2003). While ethicists advocate that firms' caring about their environmental impacts is by itself a moral virtue, some strategists conceive that understanding the strategic value for being more environmentally oriented is of ultimate importance for sustainable corporate success. A quest of this understanding logically requires researchers to address a central issue, which is, whether firms with higher environmental investment are rewarded with higher financial performance.

Environmental investment and accountability help in accurate assessment of costs and benefits of human and environmental preservation measures of companies. It provides a common framework for organizations to identify and account for past, present and future environmental costs to support managerial decision-making, control, public disclosure and performance (Chan, 2010). A company's attitude and responsibility to the environment is likely to be seen as a benchmark of its commitment to innovation and good management. Companies setting the pace on these issues will be seen as the leaders of the corporate sector. This responsibility, also called Environmental Responsibility (ER) can be measured as the amount expended, or invested in environmental initiatives and agendas (Schaltegger & Figge, 2000).

Prior studies suggest that organizations do fairly well when they are environmentally responsible, because it symbolizes them as being good global citizens. It has also been highlighted that organizations' involvement in environmental practices protects them from negative publicity and stringent actions from non-governmental organizations (Sprinkle & Maines, 2010). An added driving factor identified by Rangan, Chase and Karim (2012) is the persuasive push from the civil society organizations to incline their businesses to consider environmentally social responsibility, weighing the environmental impacts of their operations on the society. Thus, an environmentally conscious firm would attract capital from investors with ease, thereby increasing profitability and value, based on the Stakeholders theory and Resource Based View.

Does higher environmental investment improve a firm's financial performance? In seeking to answer this question, many studies have been conducted from both the economic and accounting perspectives. Researches on the relationship between environmental and financial performance are not only meaningful in the

sense of analysing firm behaviour, but also important from the social benefit perspective. In economic literature, environmental problems have traditionally been treated as inconsistencies between social and private benefits and have mainly been left to government intervention to solve them. However, if financial performance is positively related to environmental accounting performance, firms have incentives to reduce their environmental damages. This means that environmental problems may be solved by the market mechanism without government intervention, leading to a preferable environment for both firms and the government. For this reason, analysing the relationship between higher environmental performance and financial performance also has important policy implications.

Despite the expected benefits of environmental expenditure/investment on firm performance, there has been adversative views in the CSR literature. Scholars such as (Schaltegger & Figge, 2000; Rangan, Chase & Karim, 2012) argue that companies can “do well by doing good”. By making high environmental investments, value for shareholders can be created and profitability improved. They further contend that not meeting the needs of the environment can result in shareholder value depletion as a result of consumer boycotts, inability to hire the most talented people and paying potentially disciplinary fines to governments. Others argue that adopting environmental policies can destroy shareholder wealth. In its simplest form, their argument is that sustainability may simply be a type of agency cost: managers receive private benefits from embedding environmental policies and expenditure in the company’s strategy, but doing so has negative financial implications for the organization. Consequently, companies that do not operate under such additional environmental constraints will be more competitive and as a result, will be more successful in a highly competitive environment. The lack of a solid theoretical foundation repeatedly emerges as the main reason why these empirical studies have not led to knowledge convergence; hence the need for this empirical work in Southern Nigeria.

To address this issue, this study empirically examines the effects of environmental accounting performance on share value of companies, exploring environmental accounting performance dimensions in pollution management performance, resource management performance, environmental policy and reporting performance, and energy and climate change performance.

The following hypotheses were formulated for testing in the null form.

Ho1: The effects of pollution management performance on stock prices is not significantly different for high and low environmental expenditure firms.

Ho2: The effect of resource management performance on stock prices do not significantly differ for high and low environmental expenditure firms.

Ho3: The effect of environmental policy and reporting performance on stock prices is not significantly different for high and low environmental expenditure firms.

Ho4: The extent to which energy and climate change performance affect stock prices significantly is not statistically different for high and low environmental expenditure firms.

II. LITERATURE REVIEW

2.1 Environmental Accounting Practices

The Environmental accounting dimension covers firms’ relationship with the environment, and include the following: utilization of natural resources, company’s operating effect on the ecosystems, compliance with environmental regulations and laws, expanding energy-efficient operations via renewable energy, natural resource conservation and pollution prevention programs, which focus on sustainable development and environmental improvement stakeholder engagement. Since sustainable development pursues a continuous improvement regarding the quality of life, together with the welfare of current and future generations, the natural environment is an important framework towards economic competition, environmental issues related to energy, natural resources, pollution, or waste, provide competing opportunities and constraints for firms, and conveying competitive advantages for firms with effective management of environmental variables. In order to effectively manage environmental variables, gather competitive advantage and record superior environmental performance, the corporate environmental strategy instrument is adopted (Trung & Kumar, 2005). With reference to pollution prevention, firms employ ‘recycling’ (material reuse) which ultimately reduces related costs and energy consumption, as well as ‘eco-efficiency’ which determines the manufacturing and providing of products through decreasing the environmental impact and resources’ use. Thus, firms that take into account the ‘resource productiveness’ and the ‘opportunity cost of pollution’ highlight strong environmental initiatives, and as a consequence will record better environmental reputation (Miles & Covin, 2000).

2.2 Environmental Expenditure Performance

Environmental costs consist of environmental measures and environmental losses. They include clean-up costs, costs of recycling materials or conserving energy, closure costs, capital expenditure and development expenditure. These costs are incurred in preventing, reducing or repairing damage to the environment and

conserving resources. However, environmental losses are costs, which bring no benefits to the business. Such as, fines, penalties, compensation, and disposal losses relating to assets which have to be scrapped or abandoned because they damage the environment (Adediram&Alade, 2013).

According to Chan (2010), fines and penalties paid for non-compliance with environmental regulations are charged to the profit and loss account in the period in which they are incurred, regardless of whether the activities that resulted in the penalties had taken place in an earlier accounting period. If the entity has to embark on fundamental reorganizations or restructuring or to discontinuing particular activities in order to protect the environment, the costs (if material) should be treated as exceptional items and shown on the profit and loss account. Environmental costs are often hard to define from a business standpoint. When substances are released into the air, water or land, the resulting pollution is considered a social cost. But some of the new regulations have resulted in internalization of some of these externalities, for example requirement of additional investment in equipment or training, or for fines and fees resulting from noncompliance (Murphy, 2010).

The tax on carbon dioxide is definitely an environmental cost. In other cases, the distinction becomes more complicated. Investments that are partly motivated by environmental concerns, and wage to personnel in charge of among other things the environmental department of a company, could be considered environmental costs, but to what extent is not always obvious. According to Trung& Kumar (2005) the environmental costs are approximately 5% of total sales, which became worrisome and posed threat to profitability. As new legislations and increased tax rates lead to additional environmental costs, which remain an important issue for operational performance in the chemical companies.

Environmental expenditure covers firms' interactions with the environment at large, including use of natural resources, and company's impact on Earth's ecosystems, compliance with environmental regulations, leadership in addressing climate change, energy-efficient operations, renewable energy, natural resource conservation, pollution prevention programs, strategy towards sustainable development and programs to engage stakeholders for environmental improvement. It also covers amounts expended to improve the quality of life, together with the welfare of current and future generations in the natural environment through investment in 'recycling' which ultimately reduces related costs and energy consumption, as well as 'eco-efficiency' which determines the manufacturing and providing of products through decreasing the environmental impact and resources' use (Trung& Kumar, 2005).

Waste produced by a process often has to be processed before being released to the environment. Some of the waste can be handled by the company itself, other waste is better handled by external waste treating companies. Handling of the waste causes environmental costs either way. The cost of waste transportation is also considered an environmental cost to include depletion of natural resources, noise and aesthetic impacts. Residual air and water emissions, long-term waste disposal.

2.3 Environmental Accounting Performance and firm value (Stock Price)

Value of the firm is determined by market price of the firm's common stock, which in turn reflects the firm's investment, financial and dividend decisions. According to Bose (2006), firm value which is measured as return is a synthetic form of expression of economic efficiency, which reflects the firms' ability to stay efficient, leading to the maximization of shareholders' value. The return on the shares of a company certifies its intrinsic ability to get profit for shareholders, to use inputs efficiently, and in the strict conditions of market economy, to get return is a condition of survival of that enterprise and to avoid bankruptcy.

Prior studies have shown that superior environmental accounting practices and performance can result in competitive advantage for firms. Acti-Ifurueze, et al. (2013) posit that as societal and regulatory pressure for monitoring business practices have increased, investors have become keenly interested in corporate environmental practices, conferring on firms with superior and more objective environmental practices more favour, loyalty and long run competitiveness. These higher and better environmental performances can lead to higher share valuation for such companies. Thus, it can be argued that firms would make higher and more objective environmental investment, in order to benefit from higher valuations.

Clarkson et al.(2011) finds a positive relation between environmental investment and the firm market/economic value. They found higher Tobin's Q ratio for the companies that adopted higher global environmental accounting standard. Bassegy, Sunday and Okon (2013) established a positive and slightly asymmetric relationship between eco-efficiency scores and market value (where the eco-efficiency score measures the efficiency of increased value creation from using less environmental resources, such as water, air, oil, coal and other limited natural endowments). Feldman et al. (2006) also suggest that environmental improvements may lead to an increase in a company's stock price. Russo and Fouts (2007) found that better environmental performance (environmental ratings of firms based on compliance records, expenditures on waste reduction, etc.) is associated with better financial performance (measured by the return on assets). Another widely cited work is that by Hart and Ahuja (2006). They study the relationship between emission reduction and firm performance. According to their analysis, the return on sales and return on assets significantly increase in

the following year after reducing emissions, while it takes about two years to increase the return on equity. Hughes (2000) found that the pollution proxy variable is value relevant for high-polluting utilities.

Consistent with prior scholarships and findings, we argue that environmental practices and expenditure are value relevant because a strong reputation in the Corporate Social Responsibility (CSR) arena, reflected by higher and more objective environmental accounting practices and performance can help a firm attract and retain quality employees, investors and customers; enhance employee morale and productivity, build good will and trust with its key stakeholders which helps lower transaction costs and distributional conflicts (by promoting diversity, equality, fair trade terms, board independence, business strategy, etc) with key stakeholders, and provide competitive advantages for firms in accessing and utilizing environmental resource. These benefits should have positive bearing on firm's market value (measured by its share price). Based on the preceding arguments, we hypothesise that firms with higher environmental expenditure are conferred with significantly higher market values than firms with low environmental expenditure.

III. METHODOLOGY

3.1 Design and Data

The ex-post facto design was employed in this study. The ex-post facto research design involves events and data cannot be manipulated because they have already taken place. This design was suitable for the purpose of this research because it is not possible to directly manipulate or control any of the independent variables.

This study was conducted among manufacturing companies quoted on the Nigerian Stock Exchange, located in the Niger Delta Region of Nigeria, between the period 2011 – 2018. Data was obtained from seven companies: Niger (Flour) Mills, Berger Paints Plc, Dangote Plc, Lafarge (UNICEM) Plc, Guinness Brewery, Seven Up Bottling Plc, Nigerian Breweries Plc. This research used Environmental performance data obtained from CSR hub and Bloomberg Sustainability index. The dimensions of environmental performance include performance data related to Pollution Management (PM), Resource Management (RM), Environmental Policy and Reporting (EPR), and Energy and Climate Change (ECC). The data on stock prices were obtained from Financial Times (FT) and Nigerian Stock Exchange (NSE). The analysis was performed using EVIEWS 9.5.

3.2 Models Specification

To test the hypotheses of the study, four regression models were specified, with each model regressing each dimension of environmental performance on stock prices. Control vectors were employed to moderate the regression following prior scholarships.

$$SP_t = \beta_0 + \beta_1 PMP_t + \beta_2 D_t + \beta_3 PMP * D_t + \alpha_i X_t + \varepsilon_t \dots\dots\dots (1)$$

$$SP_t = \beta_0 + \beta_1 RMP_t + \beta_2 D_t + \beta_3 RMP * D_t + \alpha_i X_t + \varepsilon_t \dots\dots\dots (2)$$

$$SP_t = \beta_0 + \beta_1 EPRP_t + \beta_2 D_t + \beta_3 EPRP * D_t + \alpha_i X_t + \varepsilon_t \dots\dots\dots (3)$$

$$SP_t = \beta_0 + \beta_1 ECCP_t + \beta_2 D_t + \beta_3 ECCP * D_t + \alpha_i X_t + \varepsilon_t \dots\dots\dots (4)$$

Where: SP denotes Stock Prices (measured as - the market price of shares on the NSE floor. PMP denotes Pollution Management Performance, RMP denotes Resource Management Performance, EPRP denotes Environmental Policy and Reporting Performance, and ECCP denotes Energy and Climate Change Performance. D denotes Dummy, where D=1 for firms with high environmental expenditure (with performance score > 50 percent), and D=0 for firms with low environmental expenditure (with scores <50 percent) Note: Firms are regarded as low environmental investment or performing firms when their total environmental expenditure rating from Bloomberg and CSR hub is less than 50 percent). X represents control vectors which include Leverage (LEV – measured as total debt as a ratio of total capital) and Firm Size (SIZE - measured as logarithm of total assets) The interaction of environmental performance variables with the dummy (i.e. PMP*D, RMP*D, EPRP*D and ECCP*D) denotes environmental expenditure variables for high environmental investment firms.

IV. RESULTS

This section analyses the OLS regression results.

Table 1: Regression Results

Variables	Statistics	Model 1	Model 2	Model 3	Model 4
Intercept	Coefficient	7.277	7.447	8.968	6.213
PMP	Coefficient	10.234**			
D	Coefficient	5.193			
PMP*D	Coefficient	17.229**			
RMP	Coefficient		7.117**		
D	Coefficient		2.926		
RMP*D	Coefficient		11.677**		

EPRP	Coefficient			14.482**	
D	Coefficient			10.275**	
EPRP*D	Coefficient			21.119**	
ECCP	Coefficient				6.154**
D	Coefficient				4.228
ECCP*D	Coefficient				10.016**
R-Squared		0.799	0.781	0.827	0.879
Wald-Test	Coefficient Restriction (β_3, β_1)	Significant	Significant	Significant	Significant

**Denotes significance at the 0.05 level

4.1 Pollution Management and Share Price Performance

The result in model 1 indicates that Pollution Management Performance (PMP) accounts for about 10.23 kobo increase in market price of shares among quoted manufacturing firms in southern Nigeria. The interaction between PMP*D has a coefficient of 17.23, which indicates that firms with higher pollution management performance results in a market share price of 17.23 kobo. This result means that manufacturing firms with higher pollution management performance have higher share prices.

The results of the Wald test of coefficient restriction reveals that the difference between high and low pollution management investing firms is significantly different and significant. Thus, firms with higher pollution management performance reap higher values in share prices.

With p-value being significant at the 0.05 level, the null H1 is rejected. Thus, the effects of pollution management performance on stock prices is significantly different for high and low environmental expenditure firms, with high pollution management performance firms having significantly higher share prices.

4.2 Resource Management and Share Price Performance

The result in model 2 indicates that ResourceManagement Performance (RMP) accounts for about 7.12 kobo increase in market price of shares among quoted manufacturing firms in southern Nigeria. The interaction between RMP*D has a coefficient of 11.68, which indicates that firms with higher resource management performance results in a market share price of 11.68 kobo. The result suggests that manufacturing firms with higher resource management performance have higher share prices.

The results of the Wald test of coefficient restriction reveals that the differential effect of resource management on share prices between high and low resource management firms is significantly different and significant. Thus, firms with higher resource management performance reap higher values in share prices.

With p-value being significant at the 0.05 level, the null H2 is rejected. Thus, the effect of resource management performance on stock prices do not significantly differ for high and low environmental expenditure firms.

4.3 Environmental Policy and Reporting, and Share Price Performance

The result in model 3 indicates that Environmental Policy and Reporting (disclosure)Performance (EPRP) causes about 14.48 kobo increase in market price of shares among quoted manufacturing firms in southern Nigeria. The interaction between EPRP*D has a coefficient of 21.12, which indicates that firms with higher environmental policy and disclosure performance results in a market share price of 21.12 kobo, higher than 14.48. The result suggests that manufacturing firms with higher environmental reporting performance have higher share prices.

The results of the Wald test of coefficient restriction reveals that the differential effect of this environmental dimension on share prices between high and low resource management firms is significantly different and significant. Thus, firms with higher environmental policy and reporting reap higher values in share prices.

With p-value being significant at the 0.05 level, the null H3 is rejected. Thus, the effect of environmental policy and reporting performance on stock prices is significantly different for high and low environmental expenditure firms.

4.3 Energy and Climate Change and Share price performance

The result in model 4 indicates that Energy and Climate ChangePerformance (ECCP) causes about 6.15 kobo increase in market price of shares among quoted manufacturing firms in southern Nigeria. The interaction between ECCP*D has a coefficient of 10.02, which indicates that firms with higher ECCP results in a market share price of 10.02 kobo. The result suggests that manufacturing firms with higher ECCP performance have higher share prices.

The results of the Wald test of coefficient restriction reveals that the differential effect of the environmental dimension on share prices between high and low resource management firms is significantly different and significant. Thus, firms with higher energy and climate change performance reap higher values in share prices.

With p-value being significant at the 0.05 level, the null H4 is rejected. Thus, the extent to which energy and climate change performance affect stock prices significantly is statistically different for high and low environmental expenditure firms.

V. CONCLUSION AND RECOMMENDATIONS

The effect of environmental performance on financial performance stays at the forefront of environmental economics. Many important issues arise to evaluate the effect properly, and this paper tackles some of these issues. Despite having many papers written in this area, there is still no sufficient evidence about the effect of Environmental accounting performance on corporate value. This study has thus filled the gap.

The results of the analyses indicate that firms that invest heavily in pollution management practices, resource management practices, environmental policy and disclosure practices as well as energy and climate change activities are associated with high levels of share prices. Controlling waste emissions, reducing greenhouse gas emission, material recycling efficiency, using eco-friendly materials, reducing energy consumption, all have significant impact on the environment, which in turn results in higher market prices of shares, as investors will be willing to confer on firms with high environmental practices higher financial rewards. This means that high environmental performance results in higher market value of manufacturing firms. The results agree with Yuriko et al (2005) who found that higher environmental accounting practices attract investors.

Following a detailed time series analysis, the findings revealed that environmental performance dimensions such as pollution management practices, resource management practices, environmental policy and disclosure practices as well as energy and climate change activities have significant impact on firm's value. It also explains that higher levels of environmental performance in result in higher firm value measured as market prices of shares.

Thus, manufacturing firms with higher environmental expenditure performance are conferred with significantly higher market values than firms with low environmental expenditure. The findings suggest that it pays to do green.

From the findings and conclusion of this study, it was strongly recommended that companies should invest highly in environmental practices to better their environment. These high investment levels translate into high environmental performance, which results in higher firm's value for the investing and environmentally performing firms.

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