

# Environmental Responsibility and Firm Performance: Evidence from Nigeria

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**Abstract**—The objective of this paper is to establish a possible relationship between sustainable business practice and firm performance. Using a field survey methodology, a sample of sixty manufacturing companies in Nigeria was studied. The firms were categorised into two groups, environmentally ‘responsible’ and ‘irresponsible’ firms. An investigation was undertaken into the possible relationship between firm performance and three selected indicators of sustainable business practice: employee health and safety (EHS), waste management (WM), and community development (CD), common within the 30 ‘responsible’ firms. Findings from empirical results reveal that the sustainable practices of the ‘responsible’ firms are significantly related with firm performance. In addition, sustainable practices are inversely related with fines and penalties. The paper concludes that, within the Nigerian setting at least, sustainability affects corporate performance and sustainability may be a possible tool for corporate conflict resolution as evidenced in the reduction of fines, penalties and compensations. The paper therefore recommends research into the relationship between sustainability and conflict management.

**Keywords**—Environmental responsibility, environmental investment, social responsibility, sustainable business, social ethics, environmental ethics.

## I. INTRODUCTION

THE increase in global environmental awareness and the campaign for sustainable economic development is redirecting the attention of firms towards environmental sensitivity. The quest for sustainability has caused an emergence of many global institutions enunciating varying norms that guide human interaction with the environment. These standards are influencing business corporations to understand that their strategic position in society has the power to influence behaviour and alter the state of physical, social and economic environment. At various national levels are government regulations, society pressure groups and green consumer pressure; these developments are reawakening corporate attention to strategic and competitive role of environmental responsibility to corporate survival. However within the developing nations, the understanding is somewhat different mainly because of weak government regulations and lack of organised pressure groups and consumer awareness to influence corporate behaviour. Hence many corporations in developing countries such as Nigeria behave in a manner that

suggests they can achieve corporate goal even if environmental and social responsibility are trampled upon. It is this factor that motivated this study into searching for companies that exhibit some elements of sustainability and how this may influence corporate performance.

Although environmental regulation, pressure group activity, and consumer awareness is weak in developing countries, some corporations in these countries are becoming conscious of their international market and are making appreciable effort as regards sustainable business practices. The result of sampled industries in Nigeria shows that few companies are becoming environmentally sustainable. However a large number of firms are still apathetic about their environmental and social responsibility. Based on this divide, the paper examines the relationship between environmental responsibility and the performance of the environmentally conscious firms which in this paper are termed ‘environmentally responsible firms’. In addition, environmental responsibility of these firms is assessed against expenditure for fines and penalties to ascertain the extent which environmental responsibility is able to reduce conflict between the firm and its business environment. Three sustainable indicators are used as a measure of environmental responsibility, namely: Employee health and safety (EHS), Waste Management (WM), and community development (CD), which were identified within the environmentally responsible firms. Expenditure for these sustainable variables is related against return on total asset (ROTA) used as a measure of performance. In addition, the sustainable variables are also related against the amount expended on fines, penalties and compensations (FPC).

This research paper is anchored on the principle of sustainable economic development, which requires the corporation to maintain eco-efficiency and social equity while striving to achieve its economic goal. Related research conducted in different countries, as shown in next section, has produced diverse findings. This paper contributes to existing literature by examining this issue within the context of Nigerian manufacturing industries, to ascertain whether sustainable business practice exists and the extent it affects business performance.

The objective of this paper is therefore to discover if any relationship exists between social and environmental practices and firm performance and does so by exploring the following questions:

Is social and environmental responsibility of business a mere costly adventure or a corporate strategy?

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Does the social and environmental responsibility of business have any bearing on firm performance?

The next section of this paper provides a brief review of related literature in the form of theoretical underpinnings and previous research. This is followed by a discussion of the research methodology and then the data analysis and findings are presented. The final section provides concluding remarks.

## II. REVIEW OF RELATED LITERATURE

### A. Theoretical Underpinnings

A paradigm for a sustainable business is propounded by Elkington [1] via his triple bottom line approach. His first theory is that capitalism must satisfy legitimate demands for economic performance. With this, Elkington echoes Adam Smith's theory of the firm – that the firm has one and only one goal – to satisfy the desires of shareholders by making profits. However, profit may not be attainable if the environment in which the business operates is neglected. Hence, according to Elkington, firms must also be accountable for social and environmental performance. The economic, social and environmental consciousness of corporations - the tripod goal, creates a balance that makes their operations and actions sustainable. This new role must pervade all facets of business operations; it has to perform life-cycle technology, accommodate social and pressure groups, recreate corporate governance, remodel products and services, and ensure adherence to legislation. A corporation which accommodates the triple bottom line is contributing to sustainable development – the goal of the millennium. In support of this view, Hart [2] add that the achievement of sustainability would require a blending of product stewardship, green technology and pollution prevention. Hart's argument is that if production processes and technology are refashioned, the company would have advanced pollution control one step further because if a pragmatic prevention strategy is put in place, this obviates the stage of having to control and possibly clean up after an occurrence of pollution, hence saving both costs and redeeming corporate image. Implementing product stewardship means that the organisation is avoiding pollution from the point of product manufacture through the total life cycle.

Perhaps the substratum of environmental theory may be entrenched in two major theories: technocentric, and ecocentric. Technocentric theory as pioneered by O'Riordan [3] emphasizes the need for environmentally friendly products and clean technology. The ecocentric theory by Pepper and Dobson, [4][5] stresses the need for businesses to produce a balanced report that includes reporting the impact of business activity on the environment. A useful report would include how the corporation has managed its immediate and remote environment, but many businesses lack the strategy for proper environmental management, hence Epstein, [6] outlines the importance of developing a corporate environmental strategy, which would minimise environmental impact through recycling, life cycle assessment and waste reduction strategies. His premise is that modern corporations can be organised and managed in a manner less desecrating of the environment.

Part of this management should include proper integration of environmental reports into internal management decisions which would aid management in planning for the social and environmental responsibility facing the corporation. To this end, Shaltegger *et al.*, [7] propose a new form of business accountability to enhance environmental management. They recommend environmental management strategies including ecological investment. This is ideal if environmental and social responsibility of businesses is to be achieved to support sustainable economic development.

These theories are encapsulated in the United Nation's (UN) definition of sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own need' [8]. This paper is therefore anchored on the principle of sustainable development, which seeks to achieve societal and environmental equity while in pursuit of economic gain. This is approached by evaluating the sustainable business practices of the companies studied and how such affects corporate performance; sustainability in this context refers to the ability of the firm to maintain an equitable balance between economic wealth, eco-efficiency or environmental protection, and social-equity or social development [9]. The idea is that if a firm must achieve its long term economic objective, it must not neglect the environmental and social responsibility aspect of the triple bottom goal of sustainable economic development. A review of some previous research which has some semblance to this paper is presented in the next paragraph.

### B. Previous Research

There is no known documented research into the effect of corporate sustainability on firm performance in Nigeria. However, some research similar to that undertaken by this paper may be found in international accounting literature. For example, Clause and Rikhardsson, [10] studied the effect of environmental investment on investment decisions. The results suggest that environmental information disclosure influences investment allocation decisions. This finding would imply that companies that are apathetic to their environmental responsibility might experience eventual crashes on their stock price if their investors are rational in considering the future value of the firm based on its present state of environmental responsibility. Lars and Henrik [11] investigated the effect of environmental information on the market value of listed companies in Sweden using a residual income valuation model. The results show that environmental responsibility as disclosed by sampled companies has value relevance, since it is expected to affect the future earnings of the listed companies. Their finding has implications for companies that pollute the environment – their future solvency may be eroded with gradual depletion in earnings. Moskowitz [12] finds a positive relationship between socially responsible business practices and corporate equity returns. Related studies conducted by Balabanis *et al.*, and Tsoutsoura [13][14] using indicators such as return on capital employed and return on assets, reveal a positive relationship between the social responsibility of companies and the selected indicators of performance. Turban and Greening [15] examined the effect

of corporate social performance on organisational attractiveness to prospective employees. Their finding shows that qualified employees are influenced by the social responsibility habits of their potential employers. This finding has positive implications for job satisfaction and productivity and should serve as a warning to companies in the present competitive labour market wherein the quality of a company's employees forms a vital part of its value and competitive strategy as well. Aupperle and Hartfield [16], Cochran and Wood [17] follow a similar line of research by investigating the relationship existing between corporate social responsibility and firm performance. Lankoski [18] in his doctoral dissertation analysed, at firm level, the relationship between environmental performance and economic performance. His data shows a correlation between environmental performance and economic performance. Mackinlay [19] finds no strong relationship between economic performance and corporate social and environmental investment. While some companies may start reaping benefits within a short period, others may experience economic gain only after a long period. According to Hillman and Keim [20] not all social investment may yield return in a financial form but may boost corporate competitive strategy and be of strategic value.

McWilliams and Siegel [21] arrived at an informative finding, showing statistically that research and development expenditure tends to erode the immediate financial benefits of a company's environmental investment. It is possible that this finding may have led other researchers such as Teoh *et al.*, [22] to find no relationship between corporate financial performance and social expenditure. The motivation for many firms is that corporate social and environmental responsibility opens the door of corporate strategy to other benefits that might accrue from being socially responsible. For instance, Burke and Logsdon [23] findings show that, while some firms fail to seek competitive advantage through social responsibility, in most instances those firms that do voluntarily decide to go beyond legal and social demands find that this creates value both within the firm and from customers' perspective. This type of competitive value places a firm above its competitors, who may find it difficult to understand their success. Companies that struggle to remain socially responsible add brand value to their products and services [24]. Regulation has been found to ginger cooperate environmental and social responsibility; for instance Porter and Linde [25] found legal regulation as a factor that engenders corporate innovation among firms in their bid to remain environmentally sustainable according to regulation. It is therefore possible that weak environmental regulation in developing countries may contribute to low level sustainable corporate behaviour in these countries. It is therefore important that a sound regulatory institution is established in developing nations to encourage companies to be environmentally responsible if the goal of sustainable development must be realised. The following paragraphs summarises the state of environmental regulation in Nigeria which motivates corporate environmental responsibility in some companies. No previous research has investigated

corporate sustainability and firm performance within Nigeria, this research is therefore a humble attempt to fill this gap.

### III. ENVIRONMENTAL REGULATION IN NIGERIA AND FIRM ATTITUDE

Environmental regulation in Nigeria existed as window dressing before 1988. However, this changed as a result of an attempt in 1997 by a foreign company, acting through an agent, to dump toxic waste in the Niger Delta region. This event shocked the Federal Government of Nigeria and highlighted the porous nature of environmental regulation in the country. This gave rise to the promulgation of Decree no.42 of 1988 by the former Federal Military Government of Nigeria. This decree made it a criminal offence for anyone to carry or dump any harmful waste within the entire land mass and waters of the Federal Republic of Nigeria.

The episode gave rise to the need for an agency to oversee environmental protection; hence Decree 58 of 1988 gave birth to the Federal Environmental Protection Agency (FEPA). The Decree was later amended in 1992 by Decree No 59 of 1992, granting the FEPA the responsibility for protection of the environment, biological diversity, conservation and environmental technology and research. It was this decree that created the first standards of environmental regulation in Nigeria.

The standards include: water quality, effluent limitation, air quality, atmospheric protection, ozone layer protection, noise levels and the control of hazardous substances. These represent the efforts made by successive administrations to ameliorate the environmental problems of the country. However, on May 29, 1992 the civilian government under President Olusegun Obasanjo, added an impetus to the struggle against environmental menaces by according the environment a greater priority. To this effect, it created, for the first time in the history of Nigeria, the Ministry of Environment in June 1999. The former regulatory agency, the FEPA, was absorbed by the Ministry of Environment which took over all its functions.

It is also important to add that the establishment of another control agency the National Agency for Food and Drug Administration and Control (NAFDAC) – the first of its kind in Africa – brought unprecedented sanity to the food and drug industries. The Agency performs routine field supervision for environmental and standard compliance in the manufacture and sale of food and drugs. The Agency has launched numerous awareness campaigns to the extent that customers have been sensitised to ask for the NAFDAC certification number before buying any consumable. Hence manufacturers have had no choice other than to commence with compliance. With these two Agencies complementing each other, Nigeria could be said to be regulated environmentally, socially and health wise in comparison to other African countries. The regulatory laws are in full force and this has resulted in various forms of seizure and suspension of non-compliant firms.

Given the history of environmental regulation in Nigeria, it is understandable that sustainable business practice is relatively new in terms of enforceable regulatory standards.

However, responses elicited from some sampled manufacturing firms show that proactive firms had established a culture of being environmentally friendly even before the existence of regulations in Nigeria. This was in keeping with the global sustainable movement which had changed the nature of the market from producer orientated to green consumer orientated. One production manager responded:

“We copied sustainability from the West many years before the environmental protection agency was legalised in Nigeria, our R&D foresaw it would happen in Nigeria, it is a small world, what happens in America, Europe and Far East, would eventually affect our business in Nigeria.”

Most of the firms studied believe that they have carved a niche for themselves by being early birds on sustainability. Currently many of the manufacturing and service firms in Nigeria have a high degree of competitive advantage beyond that of their competitors. These firms have substantially improved their asset base as is noticeable from their financial statements and are experiencing improved turnover on a yearly basis.

Responses from some of the sampled manufacturing firms reveal that the regulatory role of the two agencies in Nigeria is yielding some measure of compliance. A manager in one company responded:

“The regular facility inspection by the National Agency for Food and Drugs has made us acquire one of the latest water treatment plants, and our products have regularly been passing through the laboratory tests.”

Many of the manufacturing companies used in this research showed an appreciable level of sensitivity to sustainable business practices. Responding to the question on the possible marketing impact of sustainability, one of the marketing managers had this to say:

“I am baffled by the increasing level of turnover within the past seven years, probably I may say because customers say much about our products and we were the first within this industry to receive ISO certification and the media publicized it.”

Many of the manufacturing firms have sound information on environmental protection, greenhouse gases (GHG), carbon capture and geological storage, and biodiversity. Leading manufacturing firms report efforts in water reduction and improvement in the quality of waste water discharged into the environment. It is also interesting to see that few companies are struggling to maintain biodiversity through recycling of their waste. There are efforts by some companies to provide sustainable energy and sustainable products through adequate product life cycle management. There also efforts by some companies to help combat the dreaded AIDS through various community educational and support programmes including the building of cottage hospitals. A chief executive of one of the breweries in Nigeria stated: ‘our company is at peace when our host community is healthy, and we have invested a lot in various community health efforts’.

Another manager when asked what he thought his companies gain from being environmentally friendly said:

“No more legal battles with the community, customers, employees and the local council, various fines and penalties are relatively reduced compared to the years of our ignorance.”

Other reports of sustainable responsibilities include employee health and safety, safety of product transportation, a business ethics charter (very few reported this), environmental research and development. Although most of the reports were alluring, many of the manufacturing firms did not disclose the real cost of engaging in responsible business practices. Hence three indicators, which had financial cost across many firms, were chosen: the investment in employee health and safety (EHS), waste management (WM) and community development (CD).

#### IV. METHODOLOGY

The primary purpose of this paper is to discover if any relationship exists between the corporate sustainable practices of manufacturing industries and their performance. The study focuses exclusively on selected manufacturing firms within three major industry groups as classified by the Nigerian Stock Exchange and the Corporate Affairs Commission. These companies must have filed their annual report within the last ten years (1997-2006) to be selected. This restriction places a limit on the number of firms qualifying for the study.

The empirical study is therefore based on 60 selected manufacturing companies in Nigeria. Manufacturing companies were chosen for this study because of the environmental and social effects which some of their operations have on the environment. In addition these companies are more amenable to the regulations than the extractive industries whose defiance of regulations has caused armed confrontations in the Niger Delta. The manufacturing firms are also more disposed to release pertinent information needed for research.

The data has been collected from both the financial statements of these firms and a questionnaire administered to capture vital information not shown on the face of the financial statements. Thus the data set covers 60 manufacturing firms from the chemical and paints industry group, the automobile and tyre group, and breweries. To qualify for inclusion in the sample selection, firms must have reported on fifty percent of the following in terms of environmental and social disclosure: green house gas (GHG) including carbon capture and storage (CCS), biodiversity through waste recycling, water treatment and quality of waste water discharged into the environment, product life cycle management, employee health and safety, business ethics charter, environmental research and development, community development, equal opportunity in employment, product innovation and packaging and employee training and development.

Firms that report up to fifty percent of the above listings are grouped as ‘environmentally responsible’ while firms reporting less than fifty percent are grouped under

'environmentally irresponsible'. Thirty firms were randomly selected from each of these groups, forming a total of 60 companies. The limit of 60 companies was decided on by the researcher for convenience. However, of these 60 only 30 qualified for inclusion in the multiple regression analysis because these companies had financial data on selected independent variables: employee health and safety (EHS), waste management (WM) and community development (CD). The three independent variables were chosen because they were common and consistently reported among the 30 'responsible' firms. For the purpose of this study, performance is measured by return on total assets (ROTA), which is profit before interest and tax divided by total assets. This is preferred in this research because the researcher believes it is more comprehensive in measuring performance since total assets are equal to the total liabilities of the firm. A differential analysis of means between the return on total assets (ROTA) of the two groups was first established before proceeding to an empirical analysis of the impact of selected independent variables.

#### V. THE VARIABLES

In the differential analysis the difference between the means of the two dependent variables was sought. This is the difference between the paired sample ROTA of environmentally responsible firms and the ROTA of environmentally irresponsible firms.

Two multiple regression tests were conducted; in the first one, the dependent variable is ROTA while the independent variables are employee health and safety (EHS), waste management (WM), and community development (CD). In the second multiple regression, the dependent variable is replaced with fines, penalties and compensations (FPC). The amounts for fines, penalties and compensations, included litigation costs.

#### VI. ANALYSIS OF DATA

Table II presents average return on total assets ROTA for 30 firms on each side of the environmentally responsible (ER) firms and environmentally irresponsible (EI) firms, making up the total number of firms to 60, drawn randomly from the three industrial groups stated earlier, automobile and tyre, chemical and paints, and breweries. A cursory comparison of ROTA in the two different groups of ER and EI shows a noticeable difference from 1997 to 2006. ER firms recorded a total average ROTA of 98 while the EI firms recorded a total average ROTA of 59.27, such that the total difference between the two for the 10 years is 38.73. Based on this difference, it was deemed necessary to investigate whether this difference is statistically significant to draw a conclusion. Table IV presents a statistical test of difference in means between the paired samples ROTA.

Table II presents average sustainable indicators in millions of Nigerian Naira (N'mls): employee health and safety (EHS), waste management (WM), and community development (CD). These sustainable indicators are matched against the movement in return on total assets (ROTA) expressed in percentages in the 30 selected environmentally responsible

(ER) firms for the years 1997-2006. A close look at the table discloses that ROTA tends to improve with investments in environmental responsibility. Although in the first 4 years, 1997-2000, ROTA fell gradually with increased sustainable investment, it however had a sharp recovery from 2001 to 2007. This failure in ROTA within the first four years is understandable as companies investing in environmentally sustainable projects may experience financial stress on capital and liquidity within the early years, which may affect overall performance. The question as to whether this relationship is strong enough to draw conclusions is answered using a multiple linear regression and the result is presented in Table V.

Responses elicited from respondents and some disclosure on the financial statements revealed a phenomenal reduction in the amount of fines, penalties and compensations (FPC) paid by these companies within the period of study. This also motivated an enquiry into whether this reduction could be related to firms' investment in sustainable business practices. Table III presents the average amount of fines, penalties and compensations for the period 1997 – 2006 within the selected 30 environmentally responsible (ER) firms. The table shows a positive inverse relationship between the sustainable indicators and the amounts paid for fines, penalties and compensations (FPC). As investment in environmental sustainability increased, the amounts for FPC decreased, showing that the companies may, have experienced, within the period, a relatively conflict free relationship with all stakeholders including the community, employees, customers and the government. Table VI presents the result of linear multiple regressions conducted to investigate if this relationship is significant.

Table IV presents a differential analysis of paired sample means using a ten years' average ROTA from 30 firms on each side of the two industry groups; - a total of 60 firms. The abbreviations used are ROTAEI, for environmentally responsible firms, and ROTAEI, for environmentally irresponsible firms. Results disclose the following difference: the mean for ER firms is high at 9.8 while that of EI firms is lower at 5.9; the variance of SR firms is higher at 6.6 while that of SI is as low 0.8. Their difference is statistically significant at  $P < 0.002$ , for one-tail, and  $P < 0.004$  for two-tailed test. This difference encourages further analysis to check if the performance of ROTA in environmentally responsible firms could be related to their sustainable business practices.

Table V shows the analysis of the effect of sustainable business practices on firm performance:  $ROTA = f(EHS + WM + CD)$ . Hence the regression model is given as:

$$Y = f(X_1 + X_2 + X_3, e)$$

Where  $Y = ROTA$ ,  $X_1 = EHS$ ,  $X_2 = WM$ ,  $X_3 = CD$ . and  $e = error$   
 $ROTA =$  dependent variable, an index of performance

Table VI shows the analysis of the effect of sustainable business practices on fines and penalties, such that the dependent variable  $Y$  is replaced with fines and penalties (FP). Hence:  $Y = FP$ ,  $X_1 = EHS$ ,  $X_2 = WM$ ,  $X_3 = CD$ .  
 Where  $FP =$  fines and penalties.

In Table V, the relationship between sustainable practices and ROTA is significant at ( $P < 0.0001$ ); a high significance level indicating that the positive relationship between the independent variables and ROTA may not have occurred by chance. In addition, the  $R^2$  at 95% confirms that 95% of the variation in the yearly ROTA of selected companies can be explained by the variations in the independent variables. Table VI also shows that decreasing variation in the amount of penalties and fines paid by the environmentally responsible firms could be accounted for by the sustainable business practices. A significance level of ( $P < 0.001$ ) shows that one can be confident that the relationship has not occurred by chance, and associated  $R^2 = 93\%$  shows that 93% of the variation in fines and penalties is explicable by the variations in the independent variables.

TABLE I

PAIRED AVERAGED RETURN ON TOTAL ASSETS (ROTA) FOR 30 ENVIRONMENTALLY IRRESPONSIBLE (EI) FIRMS, AND 30 ENVIRONMENTALLY RESPONSIBLE (ER) FIRMS. 1997 – 2006

|       | <u>ROTA ER</u> | <u>ROTA EI in %</u> | <u>Diff.</u> |
|-------|----------------|---------------------|--------------|
| 1997  | 9              | 7                   | 2            |
| 1998  | 8              | 6                   | 2            |
| 1999  | 7              | 6                   | 1            |
| 2000  | 6              | 6.7                 | 0.7          |
| 2001  | 8              | 6.5                 | 1.5          |
| 2002  | 10             | 6.67                | 3.33         |
| 2003  | 12             | 6                   | 6            |
| 2004  | 12             | 5.4                 | 6.6          |
| 2005  | 13             | 5                   | 8            |
| 2006  | 13             | 4                   | 9            |
| Total | 98             | 59.27               | 38.73        |

TABLE II

AVERAGED SUSTAINABLE INDICATORS AND ROTA IN 30 SELECTED ENVIRONMENTALLY RESPONSIBLE (ER) FIRMS DRAWN FROM THE AUTOMOBILE AND TYRE, BREWERIES, AND CHEMICAL AND PAINT INDUSTRY GROUP: 1997-2006

|      | <u>ROTA</u> | <u>EHS WM CD</u>        |    |    |  |
|------|-------------|-------------------------|----|----|--|
|      | <u>In %</u> | <u>in N' mls(Naira)</u> |    |    |  |
| 1997 | 9           | 2                       | 1  | 2  |  |
| 1998 | 8           | 3                       | 3  | 4  |  |
| 1999 | 7           | 3                       | 4  | 6  |  |
| 2000 | 6           | 4                       | 6  | 8  |  |
| 2001 | 8           | 8                       | 9  | 10 |  |
| 2002 | 10          | 11                      | 12 | 13 |  |
| 2003 | 12          | 16                      | 15 | 14 |  |
| 2004 | 12          | 18                      | 19 | 18 |  |
| 2005 | 13          | 22                      | 23 | 20 |  |
| 2006 | 13          | 23                      | 22 | 21 |  |

TABLE III

AVERAGED SUSTAINABLE INDICATORS AND FPC IN 30 SELECTED ENVIRONMENTALLY RESPONSIBLE (ER) FIRMS DRAWN FROM: AUTOMOBILE AND TYRE, BREWERIES, CHEMICAL AND PAINT INDUSTRY GROUP: 1997-2006

|      | <u>FPC</u>                     | <u>EHS</u> | <u>WM</u> | <u>CD</u> |
|------|--------------------------------|------------|-----------|-----------|
|      | <u>All in Millions of Niar</u> |            |           |           |
| 1997 | 15                             | 2          | 1         | 2         |
| 1998 | 13                             | 3          | 3         | 4         |
| 1999 | 8                              | 3          | 4         | 6         |
| 2000 | 6                              | 4          | 6         | 8         |
| 2001 | 6                              | 8          | 9         | 10        |
| 2002 | 5                              | 11         | 12        | 13        |
| 2003 | 4                              | 16         | 15        | 14        |
| 2004 | 3                              | 18         | 19        | 18        |
| 2005 | 2.5                            | 22         | 23        | 20        |
| 2006 | 2                              | 23         | 22        | 21        |

TABLE IV

TEST OF DIFFERENCE BETWEEN MEANS OF ROTA FOR 30 ER FIRMS AND ROTA FOR 30 EI FIRMS

t-Test: Paired Two Sample for Means

|                              | <u>ROTA ER</u> | <u>ROTA EI</u> |
|------------------------------|----------------|----------------|
| Mean                         | 9.8            | 5.927          |
| Variance                     | 6.622222222    | 0.832845555    |
| Observations                 | 10             | 10             |
| Pearson Correlation          | 0.716590971    | -              |
| Hypothesized Mean Difference | 0              |                |
| df                           | 9              |                |
| t Stat                       | 3.723204559    |                |
| P(T<=t) one-tail             | 0.002373526    |                |
| t Critical one-tail          | 1.833112923    |                |
| P(T<=t) two-tail             | 0.004747051    |                |
| t Critical two-tail          | 2.262157158    |                |

TABLE V

REGRESSION OF RETURN ON TOTAL ASSETS (ROTA) ON EHS, WM, AND CD 30 ER MANUFACTURING FIRMS (1997-2006)

COEFFICIENTS<sup>A</sup>

| Model        | UNSTANDARDIZED COEFFICIENTS |            | STANDARDIZED COEFFICIENTS | t      | Sig. |
|--------------|-----------------------------|------------|---------------------------|--------|------|
|              | B                           | Std. Error | Beta                      |        |      |
| 1 (CONSTANT) | 8.189                       | .722       |                           | 11.341 | .000 |
| EHS          | .775                        | .222       | 2.472                     | 3.492  | .013 |
| WM           | -.045                       | .404       | -.142                     | -1.12  | .915 |
| CD           | -.552                       | .303       | -1.438                    | -1.824 | .118 |

TABLE VI  
REGRESSION OF FINES, PENALTIES AND COMPENSATIONS (FPC) ON EHS, WM,  
AND CD, 30 ER MANUFACTURING FIRMS (1997-2006)

| Model        | COEFFICIENTS <sup>A</sup>      |            |                              |        |      |
|--------------|--------------------------------|------------|------------------------------|--------|------|
|              | UNSTANDARDIZED<br>COEFFICIENTS |            | STANDARDIZED<br>COEFFICIENTS | t      | Sig. |
|              | B                              | Std. Error | Beta                         |        |      |
| 1 (CONSTANT) | 15.936                         | 1.595      |                              | 9.989  | .000 |
| EHS          | .654                           | .490       | 1.220                        | 1.334  | .231 |
| WM           | .252                           | .892       | .463                         | .283   | .787 |
| CD           | -1.686                         | .669       | -2.569                       | -2.522 | .045 |

## VII. FINDINGS

Findings from the empirical study disclose a significant difference between the return on total assets of the environmentally responsible firms and those of environmentally irresponsible firms. Regression results reveal that investment in social and environmental responsibilities such as employee health and safety (EHS), waste management (WM), and community development (CD) are related to improved return on total assets (ROTA) of the environmentally responsible firms. It is also interesting to note that this performance could be attributed to a reduction in the level of fines and penalties paid by the environmentally responsible firms over the years, because empirical results show a significant relationship between the level of fines and penalties and the firm's adherence to sustainable business practice. With sustainable business practice, there was a decrease in the amount paid in fines and penalties to individuals and the government for environmental offences and in compensation to the community. Information from the questionnaire disclosed that the level of litigations against the firms decreased phenomenally. This decrease in conflict between the firms and the environment in which they operate, engendered the improved performance of these firms. The annual statements of these companies disclose improved sales turnover which is an indication that these companies are capturing larger market shares through customer goodwill. From this finding, the paper deduces that, within the Nigerian manufacturing firms, environmentally friendly practices affect corporate performance and corporate image. Hence, environmental investment is not a wasteful venture, but is part of corporate strategy, as well as, corporate responsibility to comply with regulations and support the environment while at the same time achieving the economic goal of the firm.

## VIII. CONCLUSION

This paper evaluated the possible effect of corporate sustainable practices on firm performance in Nigerian manufacturing firms. The empirical analysis in this study shows that, within the Nigerian setting, adherence to sustainable business practices influence the performance of

firms, thus justifying the objective of this paper. In addition to this general point, it is apposite to highlight that the findings of this research show that environmental responsibility can reduce corporate conflict, which is one of the major distractions to corporate attention. This research therefore points to the practical significance of sustainable corporate practice in reducing the level of fines, penalties, compensations and litigations. This finding therefore informs managers of the need to embrace environmentally friendly practices in order to restore and guarantee a conflict free corporate atmosphere needed by managers and workers for maximum productivity. Money expended in settling disputes could be applied to enhance corporate liquidity and management is better able to plan and make decisions when it is not engrossed in disputes. The art of managing and production per se is optimal when an enabling serene atmosphere is in place. The findings are pedagogically important to academics in their unending enquiry into social, economic, and natural phenomena to expand their knowledge. General peace and friendliness within the business community should be the starting point of strategic planning since any form of insurrection, overt or covert, would deplete productivity and performance. This opens up for further research, the initial research question on the extent to which factors such as fines and penalties, compensations and litigations can affect performance.

## APPENDIX

### Abbreviations and Definitions

- ROTA: Return on total assets  
EHS: Employee health and safety  
WM: Waste management  
CD: Community development  
ER: Environmentally responsible  
EI: Environmentally irresponsible  
FPC: Fines, penalties and compensations

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