

The Nexus between Environmental Cost and Financial Performance: A Trend Analysis Approach

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Abstract

This study examines the impact of environmental cost on the financial performance of listed manufacturing firms in Nigeria from 2008 to 2016. The relationship between environmental cost and financial performance of manufacturing firms in Nigeria was tested using a sample of 126 firm-year observations covering 14 manufacturing firms in the period from 2008 to 2016. The data extracted were analyzed using trend analysis graphs and panel least square method of regression. The study document a positive and significant relationship between Return on Equity (ROE), employee benefit and staff training. The authors also found a negative and insignificant relationship between Return on Equity (ROE) and donations. The result suggests investment in environmental cost indicates a good return in terms of financial performance. This finding will help eliminate the bias that investment in environmental cost is detrimental to the performance of companies in Nigeria. In the light of the empirical findings, manufacturing firms will gain a better understanding of the status and importance of environmental investment and that environmental investment is not necessary implies decline in financial performance. This implies that firms will report quality environmental issues in their corporate reports in order to benefit users of financial information. Given the important role of the manufacturing sector on the Nigerian economy, this is the first study of its kind investigating the impact of environmental cost on the financial performance among manufacturing firms in Nigeria. The study tackles the issue of donation and employee benefits in the context of environmental cost which similar studies were not able to examine.

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Introduction

The need for sustainability has prompted the development of many global firms pronouncing numerous standards that guide human communication with the environment. This is because growth in global environmental awareness and the campaign for sustainable economic development has moved the focus of firms towards environmental costs. Firms are mostly interested in taking advantage related to environmental sustainability. Hence, corporations in developing countries such as Nigeria behave in a manner that suggests that they can achieve the corporate goal even if the environmental and social responsibility of the citizens are trampled upon (Peter, Sunday & Tapang, 2012).

Also, the state of the world's business environment and the impact of mankind on the ecology of the world at large have led to increased public concern and scrutiny of the operations and performances of companies. Companies are now expected to be able to offer environment solutions to lessen the natural impact of their operations on the environment and the society at general. The rapid growth in business activities has brought about the need for companies to disclose their environmental and social activities in the annual report and accounts via corporate social responsibility. In this regards, businesses are expected to take into cognizance a wide array of environmental issues that affect the social interests and environmental activities of companies on the citizens, with the aim of reducing the damaging influence of environmental hazards on the society, such that importance is not just attached to the profitability of the companies but also to the environmental and social effect of the activities of such companies (Abiogwu, Ihendinihu & Okafor 2016). However, it is important to note that actions taken to protect the environment usually have an underlying cost, and these actions have implications in determining the success and failure of corporate organizations (Tapang, Bassej & Bessong, 2012). Therefore, the conventional approach of cost accounting has become inadequate since conventional accounting practices have ignored important environmental costs and activities especially in the manufacturing sector (Arong, Ezugwu & Egber, 2015).

The manufacturing sector is considered to be one of the leading sectors in the growth and development of any country. This is because the manufacturing sector provides a wide range of products capable of contributing to the economic growth and development of such nations. Also, manufacturing organizations provide the fundamental foundation for economic, social and environmental sustainability of the society. It is therefore significant for the government, shareholders, customers, investors and other shareholders to promote the manufacturing sector in order to achieve its full potential as one of the major providers of government revenue (Dumairy, 2000; Ame, Arumona & Erin, 2017).

In recent times, organizations have invested in environmental investment practices as opposed to the claims of the society that organizations are only interested in achieving the bottom line objective of the firm, which is known as profit maximization objective (Grag, 2002). As a result, various researchers and stakeholders have come together to offer solutions to lessen the impact of the natural and economic hazard of companies in the environment such that both the stakeholders and the companies can achieve a win-win situation in the long run (Kai, 2015). Also, the increasing rate of environmental degradation and resource depletion (especially in the Niger Delta area) is a source of concern for stakeholders who are directly affected by these hazards. Many manufacturing companies in Nigeria are usually faced with youth restlessness as a result of unemployment, and the unavailability of social amenities which has increased the need for environmental investments (Agbiogwu, Ihendinuhu & Okafor 2016).

Although, the investment of companies in the environment has received a huge amount of attention in the last decade and subsequently welcomed by the communities and society at large, it is also important to note that these environmental investments are not totally appealing to some organization who sacrifice their bottom line objective as a result of incurring environmental investment. This is because; environmental investments required a significantly high amount of money which reduces the profitability of the firms. Though there have been several studies of the effect of environmental investments on firms performance in different parts of the world, while some researchers have focused on the internal effect of environmental investments on the performance of firms, others have focused on the external effect of environmental investments on the performance of the firms.

Studies that investigate the impact of environmental cost on firms performance have been conducted in the context of developed countries such as (Magara, Amin'a & Momanyi 2015; Chauhan & Kalola 2014; Rachmad, 2013; Pek & Lucy 2012; Gibson 2014; Kai 2015; Lui, McConkey, Lui & Li 2011; Muttanachai & Patricia 2012) while empirical studies suggest that only a few studies have been carried out in emerging countries such as (Arong, Ezugwu & Egber 2014; Tapang, Basse & Bessong 2012; Daniel 2013; Abiogwu, Ihendinuhu & Okafor 2016; Basse, Sunday & Okon 2013, Erin, Afeisume & Owodunni, 2016). However, the review of empirical studies also showed that most of the studies have focused more on the oil sector compared to other sectors. The study represents a significant gap in empirical literature taking into account the differences between emerging countries and developed countries. Furthermore, the review of empirical literature suggests that several studies such as (Daniel 2013; Eri 2011; Chauhan & Kalola 2014; Pek & Luky 2012; Raymond, John & Chigbo 2016) have found either a negative and significant relationship between environmental cost and firms performance using different variables while other studies such as (Karambu & Joseph 2016; Tze & Siew 2016; Nnamani, Onyekwelu & Ugwu 2017) have found a positive and/or no significant relationship between environmental cost and firms performance.

These inconclusive findings and mixed results of these studies have made the subject matter of environmental cost and firms' performance unsolved especially in relations to emerging countries. Therefore, there is a need to investigate the effect of environmental cost on the financial performance of manufacturing companies in the framework of an

emerging country such as Nigeria. Also, this study will examine the trend analysis of environmental cost and financial performance and effect of environmental cost on the financial performance of manufacturing companies in Nigeria from the period of 2008 to 2016.

Literature Review

The concept of environmental cost has been defined by several researchers in different ways such that environmental costs are often difficult to define from a business standpoint. In the past ten years, environmental costs have been described as a subset of the costs of operating a business. Aert, Cormier, and Magnam (2013) defined environmental costs "as costs associated with the creation, detection, remediation, and prevention of environmental degradation. They classified environmental costs into four categories namely; prevention costs, detection costs, internal failure costs and external failure costs. Environmental costs are costs associated with the actual or potential deterioration of natural assets due to economic activities. Such costs can be viewed from two different points, namely; costs caused, that is, costs associated with economic units actually or potentially causing environmental deterioration by their own activities and costs borne, that is, costs incurred by economic units independently of whether they have actually caused the environmental impacts, while the process of communicating environmental cost of information to various stakeholders is referred to as environmental accounting. Environmental accounting is a significant tool for understanding the role played by the natural environment in the economy. Environmental accounting provides data which focus on both the contribution of natural resources to economic well-being and the cost enforced by pollution or resources degradation (Bassey, Sunday & Okon, 2013).

Empirical evidence suggests that there are various types of environmental cost variables. Several studies have made use of various environmental cost variables such as; fines, penalties, employee health cost and safety cost, waste management cost and compensation cost (Peter, Sunday & Tapang, 2012). While Arong, Ezegwu, and Egbere (2015) made use of environmental costs variables such as the value of quantity oil spilled, the value of the quantity of gas utilized, the value of profits of gas produced since the studies focused on the oil and gas sector of the economy. Okere (2018), adopted environmental cost variables like donations, employee benefits, and staff training which will be adopted for the purpose of this study.

Empirical Review

Bassey, Sunday, and Okon (2013) investigated the influence of environmental accounting and organization performance on oil and gas companies in the Niger Delta. The study used the Pearson product moment of the correlation coefficient. The study found that there is a relationship between environmental cost and firms' profitability. The study suggested that firms should adopt a uniform method of reporting and revealing environmental issues for the tenacity of control and measurement of performance. In the same vein, Arong, Ezugwu, and Egbere (2014) aimed at determining the impact of environmental cost on the profitability of the oil sector in Nigeria. The study was carried out using multiple regression analytical technique. The study revealed that there is a

substantial connection between the effect of environmental cost and profitability of the oil sector in Nigeria. The study suggested that there should be policy consistency that will improve external reporting and environmental cost data.

Shehu (2010) examined the influence of environmental expenditure on the performance of quoted oil companies in Nigeria. The study adopted the use of correlation and multiple regressions for its data analysis. The study found that environmental expenditure has a great impact on the performance of quoted oil companies in Nigeria. Consistent with the study of Shehu (2010); Tapang, Bassey, and Bessong (2012) explored the impact of environmental activities on the profitability of oil companies in Nigeria. The study adopted the use of ordinary least square method in the analysis of data collected from internal management report. The study found that there is a relationship between environmental activities and profitability. The study suggested that Nigerian petroleum companies should ensure proper management of environmental cost in order to increase their profitability. Raymond, John, and Chigbo (2016) investigated the impact of sustainability environmental cost on the performance of corporate organizations in Nigeria. The study used regression analysis. The study revealed that environmental cost does not have a positive influence on revenue of corporate organization but influence the profit generated in a positive way. The study recommended that indigenous and multi-national firms should ensure that strict policies in relations to environmental accounting are obeyed in order to enhance stable organizational performance.

Eri (2011) examined the effect of the environmental investment on firm performance in Japan. The study adopted the use of ordinary least-square regression for the analysis of its data. The study found that in the short term, environmental investment does not influence firms' performance but in the long term, it has an impact on firms' performance. The study suggested that there is a time interval between investment and profitability valuation in accordance with consumers and shareholders. Vinayagamoorthi, Murugesan, Kasilingam, and Ramachandran (2015) studied the relationship between environmental performance and profitability of Indian firms. The study adopted the use of Granger causality test. The study revealed that there is an inverse relationship between the return on capital employed (ROCE) and energy intensity (EI) while a direct relationship exists between the firms return on equity (ROE), return on asset (ROA), return on sales (ROS) and energy intensity (EI). The study recommended that the practitioners and policy-makers should implement environmentally friendly technologies and inspire the Indian firms to use more energy proficient technology.

Acti, Lyndon, and Bingilar (2013) investigated the effect of environmental cost on corporate performance of oil companies in Niger Delta. The study employed the use of multiple regression analysis. The study found that sustainable business practices and corporate performance is significantly related. The study suggested that management of oil companies in Niger Delta should develop a well-articulated environmental costing system in order to assure a struggle-free corporate atmosphere. Similar to the work of Acti et al. (2013), Ayoib, Nosakhare and Chijoke (2016) examined the impact of environmental accounting on their financial performance of firms in Nigeria. The study used the ordinary least square regression method. The study found that a significant relationship exists between environmental accounting disclosure and firms profitability,

since environmental accounting is determined by firm-specific variables such as firm size and industry type. The study recommended that both individual and environmental disclosures affect firm-specific variables on financial performance.

Theoretical Review

The stakeholder theory was adopted as the theoretical basis for explaining the relationship that exists between the various interest groups while assessing the effect of environmental cost on the performance of firms. The basic suggestion of the stakeholders theory is that the firm's achievement is reliant on the proper management of all the interactions that a firm has with its stakeholders, a term originally introduced by Stanford Research Institute (SRI) to refer to those groups, without the support of the groups, the organization would cease to exist (Bassey, Sunday & Okon, 2013). Nduke and John (2015) defined stakeholders as any individual or group who can influence or is influenced by the actions, decisions, policies, practices, or goal of the firm. According to Tapang, Bassey & Bessong, (2012), "the rather simplistic view of management objectives put forward by economic theories have been challenged by sociologists and psychologists. The behavioral scientists contend that profit maximization alone is not, and cannot be the sole management objective". They also said that there is a believe that the employed manager hoped to satisfy his own personal interest vis-à-vis the interest of the organization.

The stakeholder theory suggested an increase in the level of environmental awareness which forms the essential need for companies to outspread their corporate planning to include the non-traditional stakeholders such as the regulatory adversarial groups in order to adjust to changing social demands (Trotman, 1999). The core concern of the stakeholder theory in environmental accounting is to address the environment cost elements, valuation and its inclusion in the financial statements. According to Gray et al. (1996), stakeholders are acknowledged by companies to determine which groups need to be managed in order to enhance the benefits of the corporation. The stakeholder theory recommends that companies can manage these relationships based on different issues such as the nature of the task environment, the salience of stakeholder groups and the values of decision makers who regulate the shareholder ranking process (Donaldson & Preston, 1995)

Methods

This study used panel data to investigate the impact of environmental cost on the financial performance of listed manufacturing companies in Nigeria for the period of 2008 to 2016. In order to achieve the objective one of the study, which is to examine the trend of environmental cost and financial performance of manufacturing companies in Nigeria from 2008-2016, descriptive statistics was adopted, while the objective two of the study was achieved using the panel ordinary least square method of regression to investigate the effect of environmental cost on the financial performance of manufacturing companies in Nigeria. However, the environmental cost was measured using the donation, employee benefit, and staff training while return on equity (ROE) was used to measure the financial performance of manufacturing companies in Nigeria.

Model Specification

The following models were used to examine the relationship that exists between environmental cost variables and the financial performance of manufacturing firms in Nigeria. This study adapts the model of Okere (2017) who examined the effect of the environmental investment on the financial performance of listed manufacturing companies in Nigeria.

$$\text{PERF} = f(\text{Environmental Cost}) \dots\dots\dots (i)$$

$$\text{PERF} = f(\text{DON}, \text{EB}, \text{ST}) \dots\dots\dots (ii)$$

$$\text{ROE} = \beta_0 + \beta_1 \log \text{DON}_{it} + \beta_2 \log \text{EB}_{it} + \beta_3 \log \text{ST}_{it} + \text{Log FS}_{it} + \mu_{it} \dots\dots\dots (iii)$$

Where:

ROE= Return on Equity, PERF= Performance, DON= Donation, EB= Employee benefit.

ST= Staff training, FS= Firm size.

μ = Stochastic error term/ random error term.

i = Cross-sectional dimensions and range from 1 to n number of period.

t = Time series dimensions and ranges from 1 to t number of manufacturing companies.

B_0 = Intercept, B_1 , β_2 , and β_3 are the parameters to be estimated.

Apriori Expectation

All explanatory variables are expected to have a positive influence on environmental cost. This can be written as $\beta_1, \beta_2, \beta_3 > 0$.

Variable Measurement

Dependent Variables:

Return on equity was measured using profit before interest and tax divided by shareholders i.e.

$$\text{Return on Equity (ROE)} = \frac{\text{Profit before interest and tax}}{\text{Shareholders fund}} \times 100\%$$

Independent variables: Environmental cost includes:

Donation: Donation was measured by the natural logarithm of firms' donations to the environment.

Employee Benefits: Employee benefits were measured by the natural logarithm of the aggregated amount invested by the firm towards the non-monetary services enjoyed by the employees of the firm.

Staff Training: Staff training was measured by the natural logarithm of the total amount incurred towards the training of the employees.

Results

This section shows the trend of environmental cost and financial performance of each of the selected listed manufacturing companies. The graphs below show the graphical relationship between environmental cost and financial performance of the selected manufacturing companies.

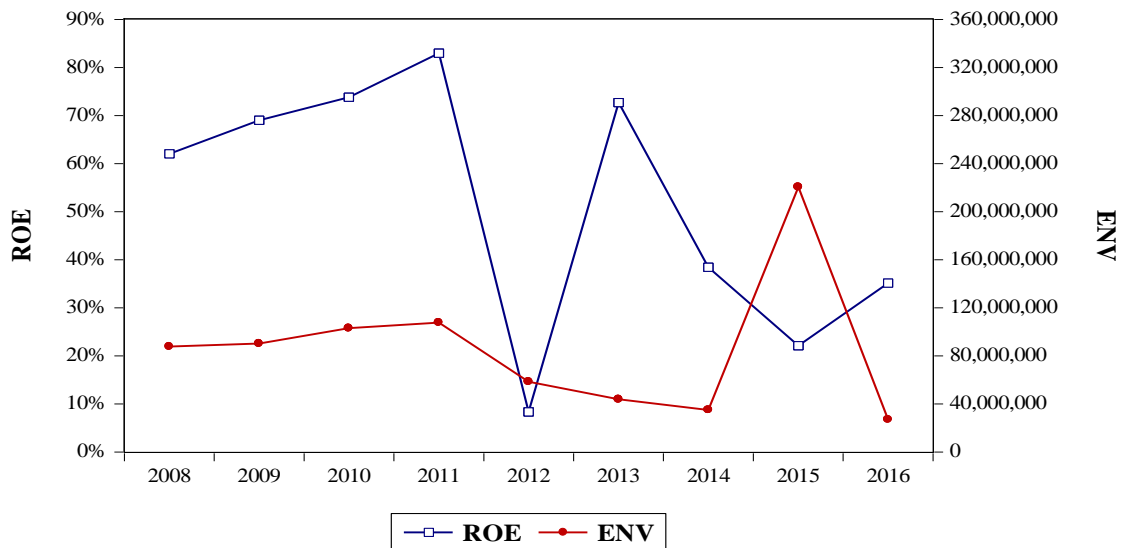


Figure 1: Trend Analysis of Financial Performance and Environmental Cost of Unilever Plc (2008-2016)

The trend shows that there was an increase in performance from 62% in 2008 to 69% in 2009 and 73% in 2010 to 82% in 2011. However, Unilever Plc performance nosedive to 8% in 2012, while it increased to 72% in 2013, and later reduced to 38% in 2014. The performance reduced in 2015 to 22%, however, this poor performance increased to 35% in 2016. The trend above shows that over the years under study, environmental cost has steadily increased from ₦88,000,000 to ₦108,000,000 between 2008 and 2011 before it took a nosedive in 2012 to ₦58,000,000. In 2013, environmental cost reduced to ₦44,000,000 and further reduced to ₦35,000,000. However, the environmental cost in 2015 increased to a value ₦220,000,000, but reduced to ₦27,000,000 in 2016.

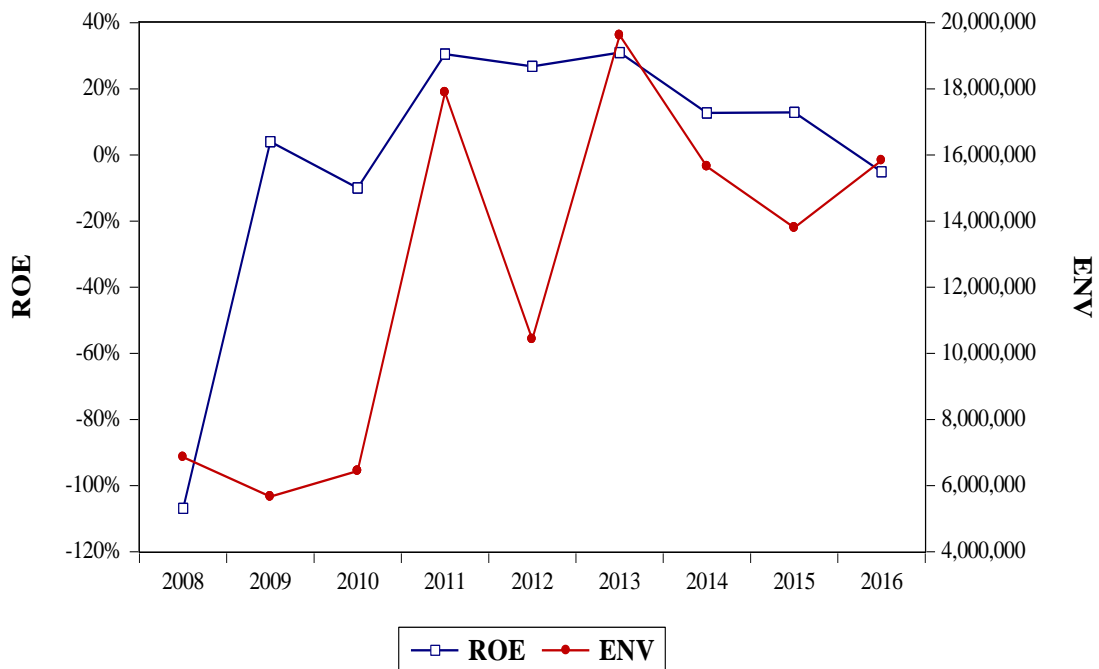


Figure 2: Trend Analysis of Financial performance and Environmental cost of Cadbury Plc (2008-2016)

The trend shows that performance increased from -107% in 2008 to 4% in 2009 which later reduced to -10% in 2010. The trend also shows that there was an increase in 2011 to 30%, but decreased to 28% in 2012 and later increased to 30% in 2013. The performance reduced to 12% in 2014 which remained steady until it decreased to 5% in 2016. The trend above shows that there was a fall in environmental cost from ₦9,000,000 to ₦6,000,000 between 2008 and 2009. In 2010, it increased from ₦6,000,000 to ₦17,000,000 in 2011, however it declined to ₦10,000,000 in 2012 and increased to ₦20,000,000 in 2013 and reduced to ₦16,000,000 in 2014. However, there was a decrease in environmental cost to ₦14,000,000 in 2015 and increased to ₦16,000,000 in 2016.

The trend shows that there was a decline in performance from 37% to 35% between 2008 and 2009. However, performance increased to 48% in 2010 and later reduced to 40% in 2011 and further reduced to 34% in 2012. The performance increased by 35% in 2013 and declined to 33% in 2014. However, the performance of Dangote Cement increased from 30% to 38% between 2015 and 2016. The trend above shows that the environmental cost of Dangote Cement increased from ₦78,000,000 to ₦523,000,000 between 2008 and 2009, it further increased to ₦625,000,000 in 2010 before declining to ₦464,000,000 in 2011. The poor performance did not last for long as it increased to ₦1,000,000,000 in 2012 and maintained that position in 2013 before it decreased to ₦928,000,000 in 2014. However, there was a fall from ₦727,000,000 to ₦12,000,000 between 2015 and 2016.

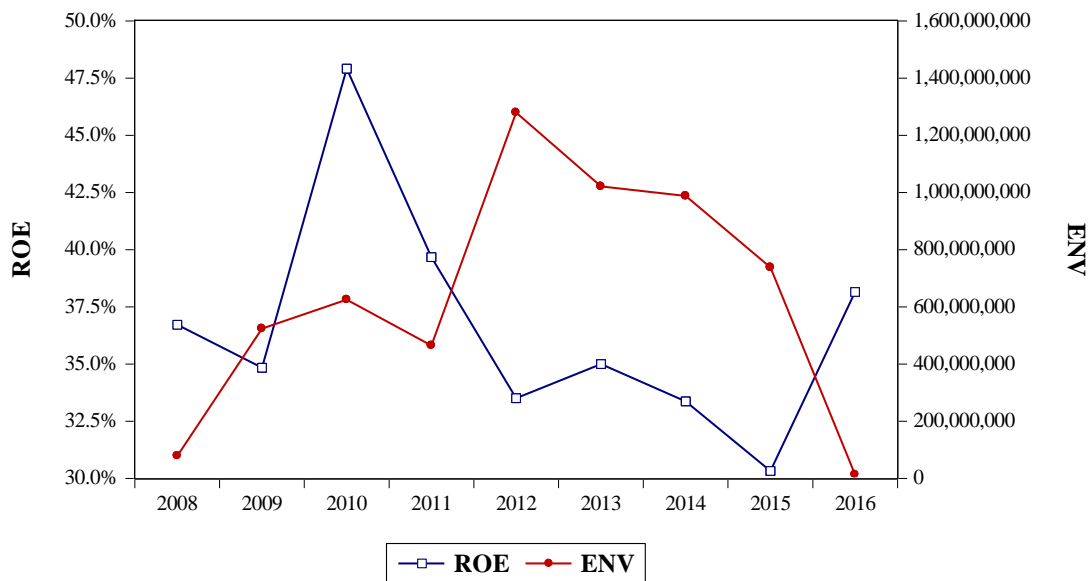


Figure 3: Trend Analysis of Financial performance and Environmental cost of Dangote Cement (2008-2016)

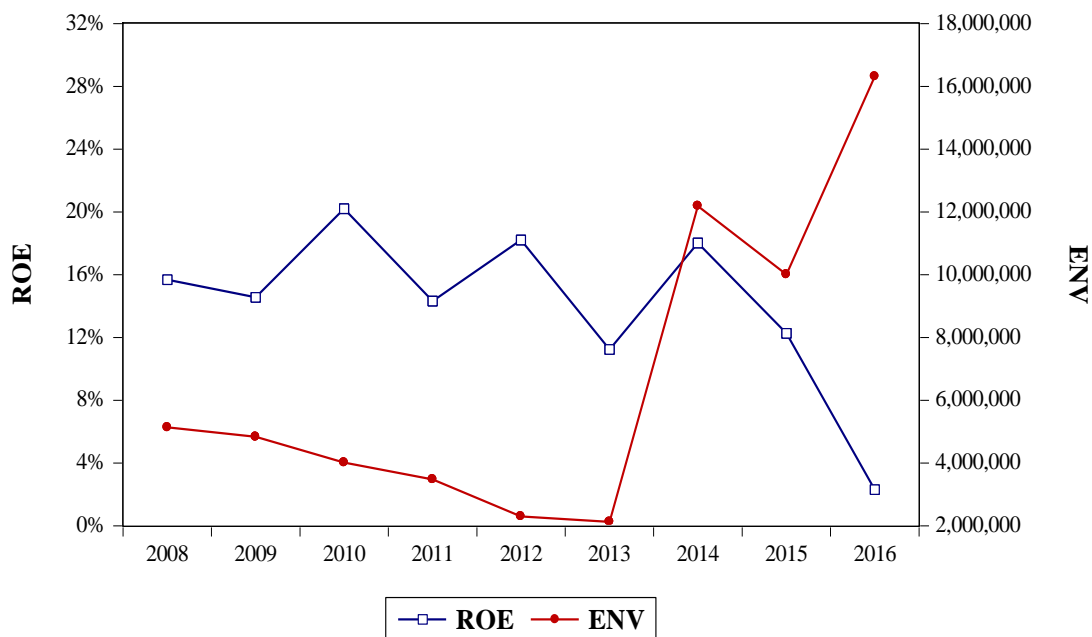


Figure 4: Trend Analysis of Financial Performance and Environmental Cost of Pz Cussons (2008-2016)

The trend shows that there was a decline in performance from 16% to 15% between 2008 and 2009. The trend also showed that performance maintained an unstable movement from 2010 to 2014 (20%, 14%, 18%, 11% & 18% respectively). However, it declined to 12% in 2015 and further declined to 2% in 2016. The trend above shows that environmental cost reduced little by little from ₦5,000,000 to ₦2,000,000 between 2008

and 2013. However, it increased to ₦12,000,000 in 2014 and reduced to ₦10,000,000 in 2015. This performance did not last for long as it increased to ₦16,000,000 in 2016.

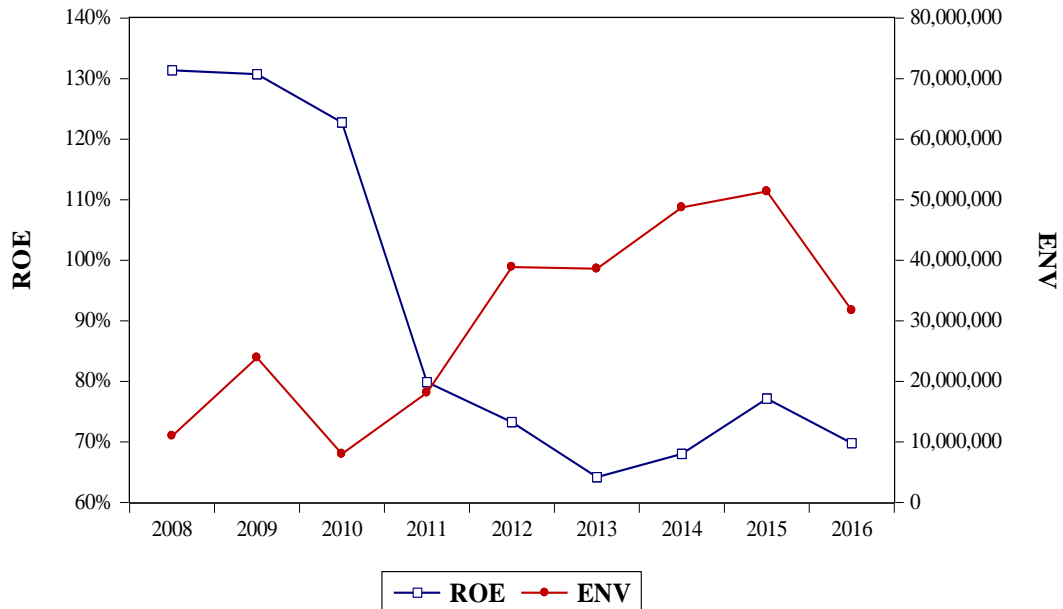


Figure 5: Trend Analysis of Financial Performance and Environmental Cost of Nestle Plc (2008-2016)

The trend shows that performance was steady between 2008 and 2009 before it decreased to 123% in 2010 which further took a nosedive in 2011 to 80%. The performance further declined from 73% to 68% between 2012 and 2013. This performance did not last for long as it increased to 68% in 2014 and further increased to 77% in 2015. However, there was a fall in performance of 69% in 2016. The trend above shows that there was a rise in environmental cost from ₦10,000,000 to ₦24,000,000 between 2008 and 2009. However, the environmental cost reduced to ₦8,000,000 in 2010 and increased to ₦39,000,000 in 2012 and maintained that position in 2013 before it further increased to ₦49,000,000 in 2014. There was a fall in the environmental cost of Nestle plc from ₦51,000,000 to ₦32,000,000 between 2015 and 2016.

The trend shows that there was a decline in performance from 92% to 47% between 2008 and 2009 which further decreased to 38% in 2010 which reduced in 2011 to 26%. Furthermore, the performance reduced from 35% to 30% between 2012 and 2013 while the performance of Dangote Sugar increased from 26% in 2014 to 29% in 2015, and thereafter declined to 26% in 2016. The trend above shows that the environmental cost was steady from 2008 to 2012. However, environmental cost increased to ₦234,000,000 in 2013. The environmental cost of Dangote Sugar took a nosedive in 2014 to ₦20,000,000 and further reduced to ₦9,000,000 in 2015, and further increased to ₦52,000,000 in 2016.

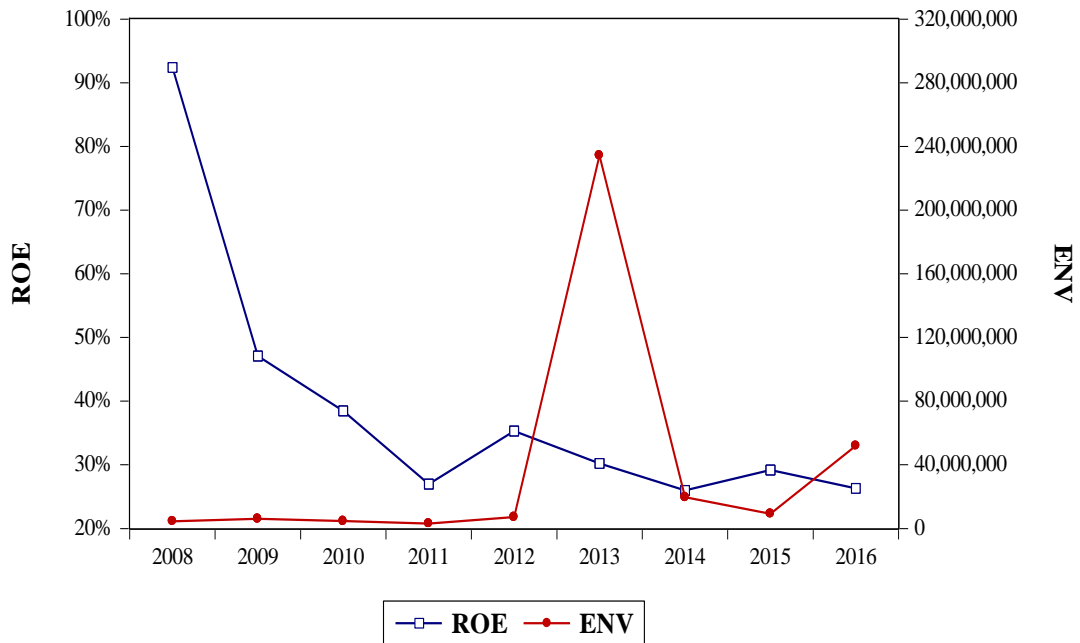


Figure 6: Trend Analysis of Financial Performance and Environmental Cost of Dangote Sugar (2008-2016)

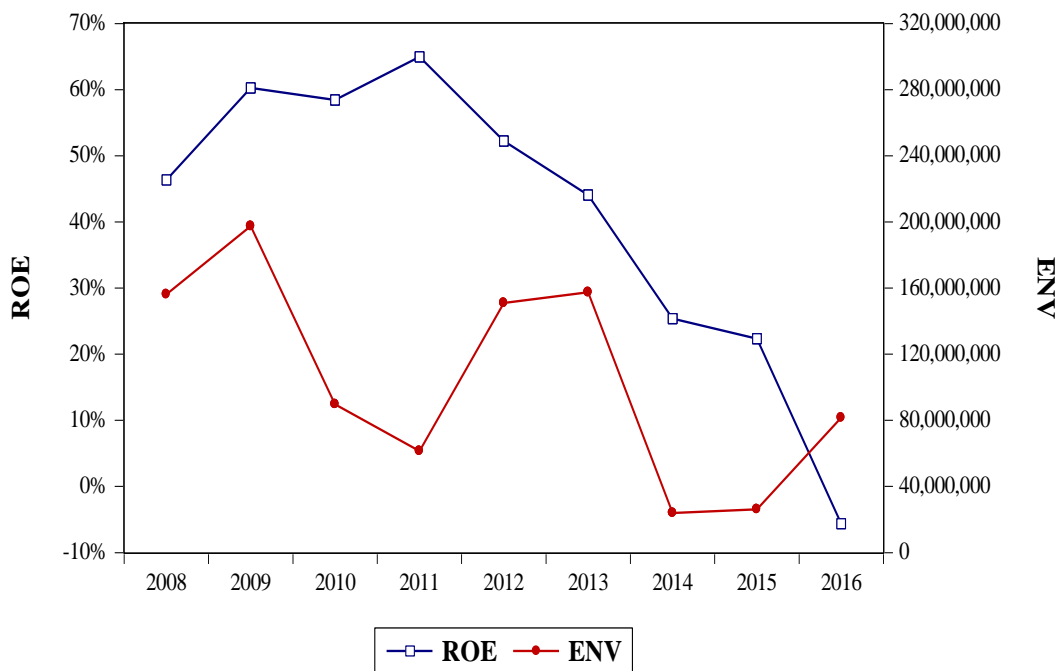


Figure 7: Trend Analysis of Financial Performance and Environmental Cost of Guinness Plc (2008-2016)

The trend shows that there was an increase in performance from 46% to 60% between 2008 and 2009 which further decreased to 58% in 2010 and increased in 2011 to 64%. Also, the performance declined from 52% to 44% between 2012 and 2013, while the performance of Guinness Plc reduced from 25% in 2014 to 22% in 2015 and declined to

5% in 2016. The trend above shows that the environmental cost of increased from ₦158,000,000 to ₦197,000,000 between 2008 and 2009 and declined to ₦90,000,000 in 2010 before it took a downward movement to ₦61,000,000 in 2011. The poor performance did not last for long as it increased to ₦150,000,000 in 2012 and further increased in 2013 to ₦157,000,000 before it decreased to ₦24,000,000 in 2014. However, there was a rise from ₦26,000,000 to ₦82,000,000 between 2015 and 2016.

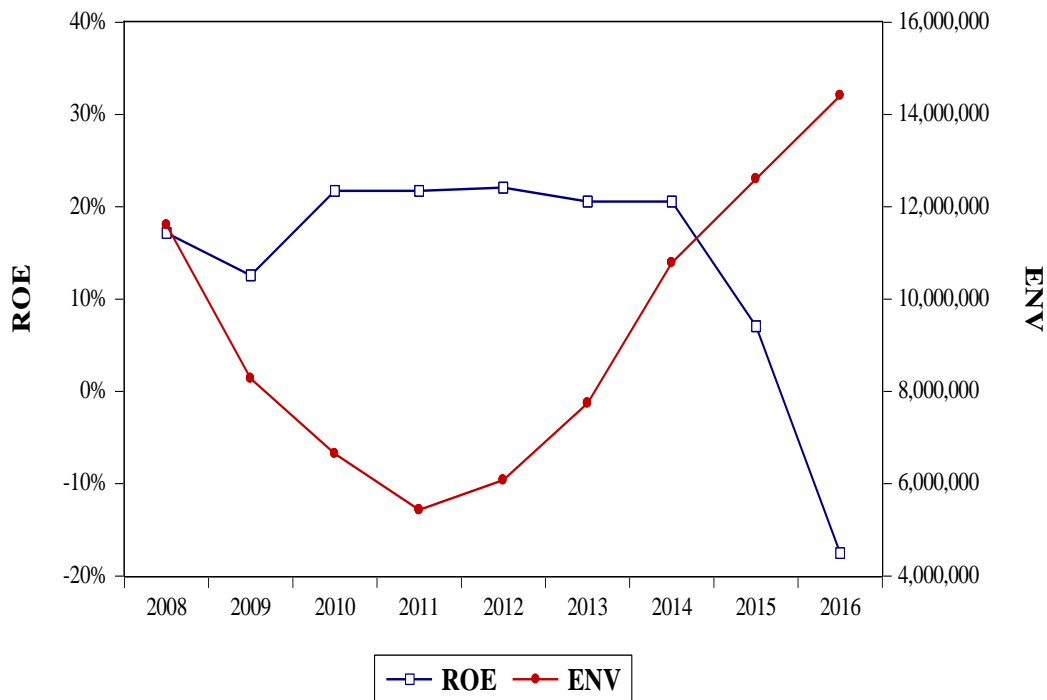


Figure 8: Trend Analysis of Financial Performance and Environmental Cost of Honeywell (2008-2016)

The result in figure 8 is a trend analysis of the financial performance of Honeywell for the period between 2008 and 2016, and the trend analysis of environmental variables as a measure of environmental cost Honeywell. The trend shows that there was a fall in performance from 17% to 12% between 2008 and 2009. However, the trend shows that performance was steady between 2010 and 2011 before it increased to 22% in 2012. Performance reduced to 20% in 2013 and 2014. The performance reduced from 7% to 18% between 2015 and 2016. The trend above shows that there was a fall in environmental cost from ₦11,000,000 to ₦5,000,000 between 2008 and 2011. The environmental cost increased above ₦5,000,000 between 2012 and 2016 that is, ₦6,000,000, ₦7,000,000, ₦10,000,000, ₦12,000,000 and ₦14,000,000 respectively.

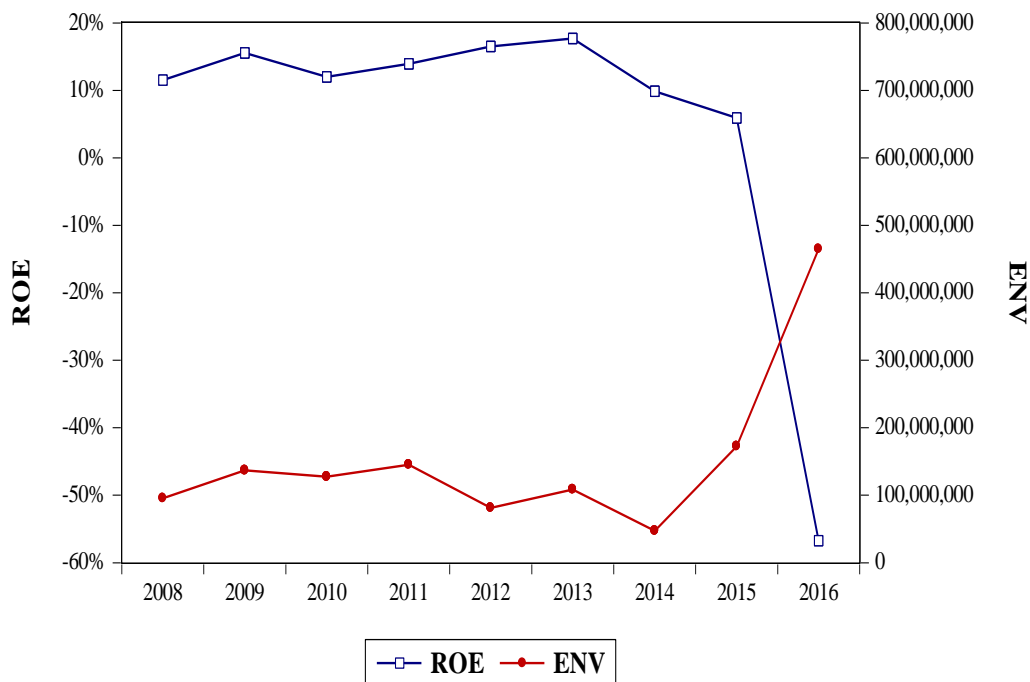


Figure 9: Trend Analysis of Financial Performance and Environmental Cost of Leventis Plc (2008-2016)

The trend above shows that there was an increase in performance from 11% to 15% between 2008 and 2009. It also shows that there was an increase from 12% to 13% between 2010 and 2011 which further increased to 16% in 2012. There was a fall in performance from 17% to 9% between 2013 and 2014. The performance further decreased from 5% to 56% between 2015 and 2016. The trend above also shows that environmental cost has increased from ₦95,000,000 to ₦137,000,000 between 2008 and 2009 which reduced to ₦127,000,000 in 2010 and increased to ₦145,000,000 in 2011. There was an increase from ₦81,000,000 to ₦108,000,000 between 2012 and 2013 which took a nosedive to ₦47,000,000 in 2014. There was a rise in environmental cost from ₦172,000,000 to ₦464,000,000 between 2015 and 2016.

The trend shows that performance was less than 25% from 2008 to 2012 that is, 22%, 19%, 17%, 15% and 24% respectively before it increased to 25% in 2013. There was a fall in performance from 44% to 36% between 2014 and 2015. The performance nosedived to 15% in 2016. The above trend shows that there was a rise in environmental cost from ₦7,000,000 to ₦11,000,000 between 2008 and 2010.

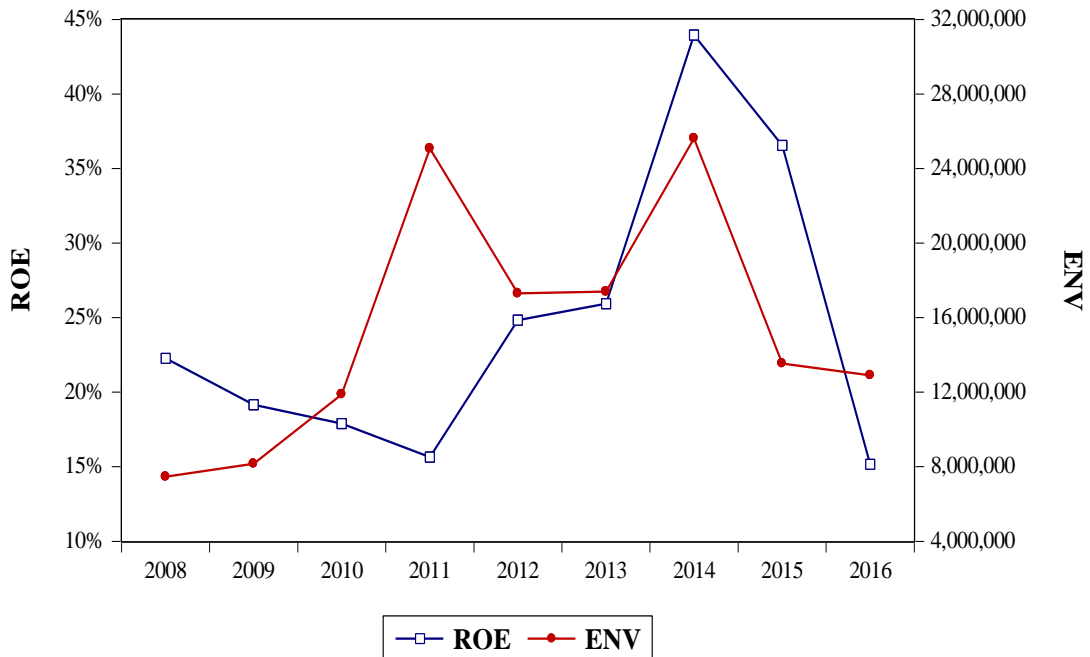


Figure 10: Trend Analysis of Financial Performance and Environmental Cost of 7up Plc (2008-2016)

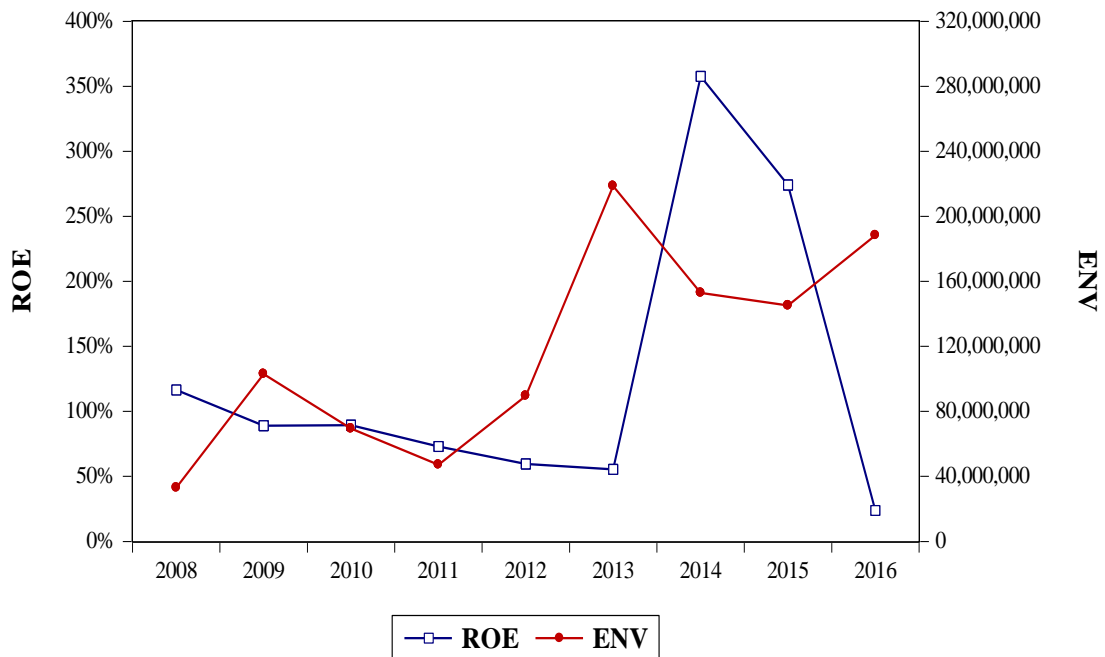


Figure 11: Trend Analysis of Financial Performance and Environmental Cost of Nigerian Breweries (2008-2016)

The trend shows that there was a fall in performance from 116% to 89% between 2008 and 2009 which was stable in 2010 before it reduced from 73% to 55% between 2011 and 2013. There was a fall from 324% to 274% between 2014 and 2015. The performance of Nigerian Breweries nosedived to 24% in 2016. The trend above also shows that

environmental cost increased from ₦33,000,000 to ₦102,000,000 between 2008 and 2009 which reduced to ₦47,000,000 in 2011. There was an increase from ₦89,000,000 to ₦219,000,000 between 2012 and 2013. There was a fall in the environmental cost of Nigerian breweries from ₦152,000,000 to ₦145,000,000 between 2014 and 2015. In 2016, the environmental cost as shown in the trend was ₦188,000,000.

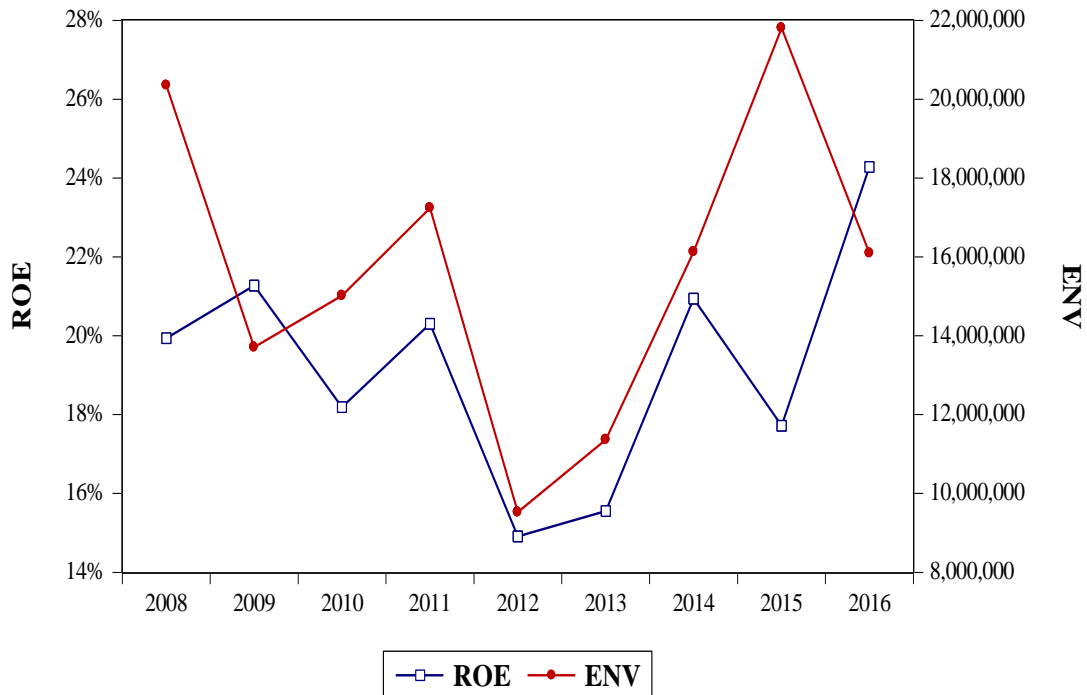


Figure 12: Trend Analysis of Financial Performance and Environmental Cost of Beta Glass (2008-2016)

The trend shows that there was an increase in performance from 19% to 21% between 2008 and 2009 which decreased in 2010 to 18%. There was a fall from 20% to 14% which increased to 15% in 2011, 2012 and 2013 respectively. There was a decrease in the performance of beta glass from 20% to 17% between 2014 and 2015. This poor performance did not last long as it increased to 24% in 2016.

The trend shows that there was a fall in performance from 17% to 12% to 10% in 2008, 2009 and 2010 respectively; it also shows that it maintained 10% in 2011. There was a fall from 4% to 0% between 2012 and 2013 and it was stable between 2014 and 2014. However, the trend shows that performance as of 2016 was 11%. The trend above shows that environmental cost was within the range of ₦1,000,000 from 2008 to 2014 which just a difference of ₦100,000 and ₦300,000 between them except in 2015 which reduced drastically to ₦800,000. This poor performance did not last for long as it increased back to ₦1,000,000 in 2016.

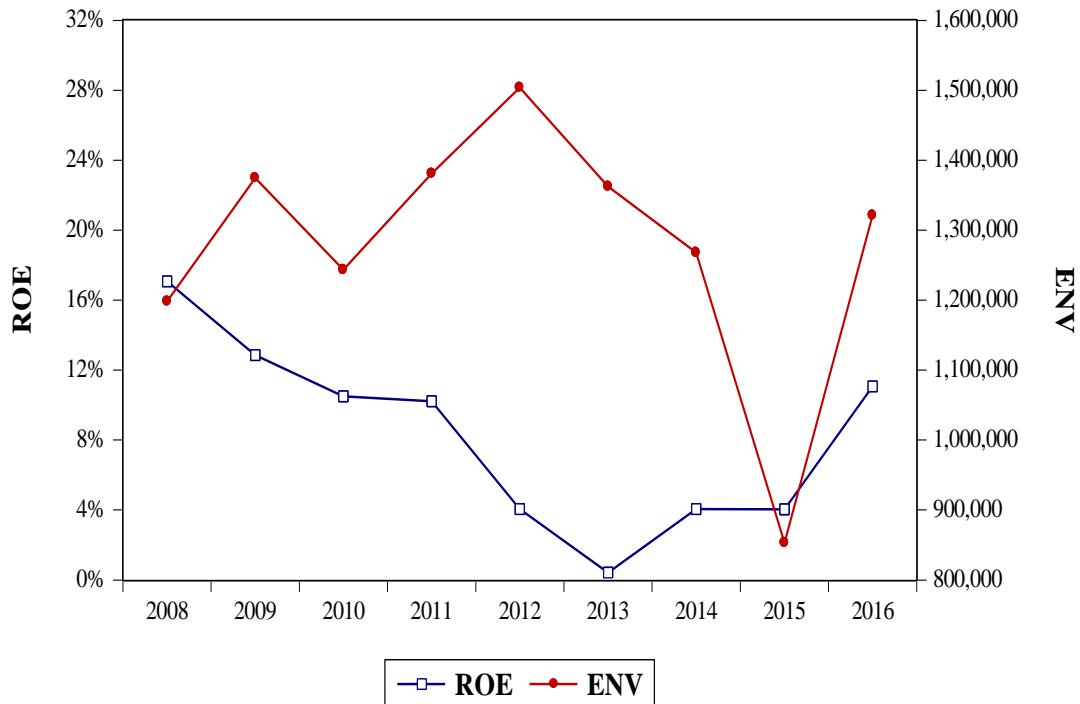


Figure 13: Trend Analysis of Financial Performance and Environmental Cost of May and Baker (2008-2016)

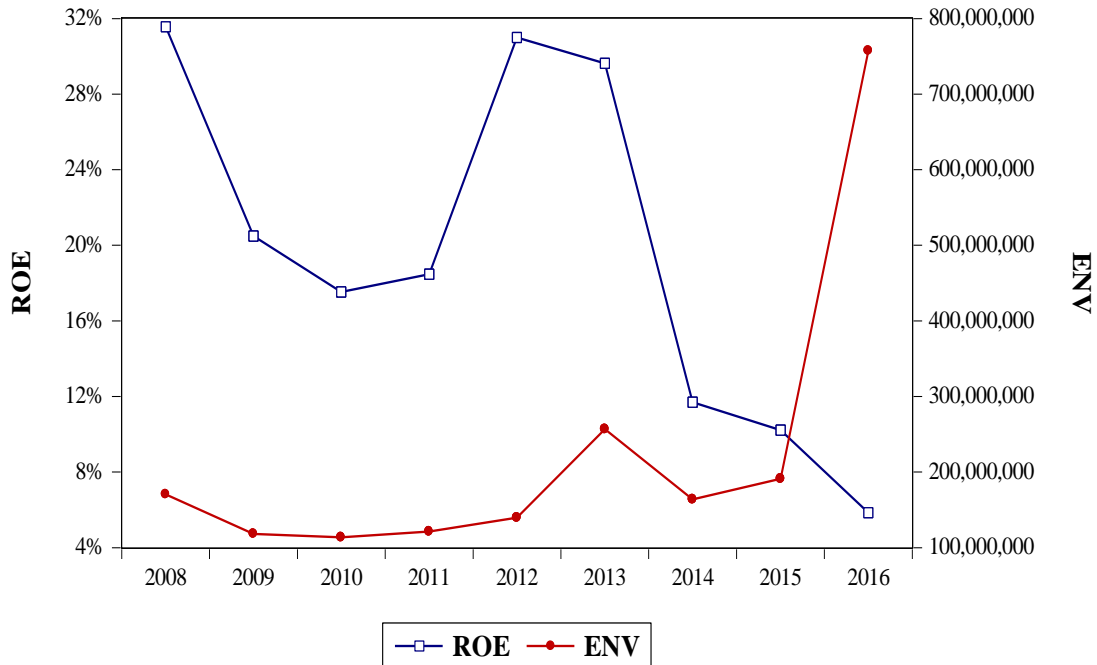


Figure 14: Trend Analysis of Financial Performance and Environmental Cost of Lafarge Cement (2008-2016)

The trend shows that there was a fall in performance from 32% to 20% between 2008 and 2009; it also shows that there was an increase from 17% to 18% between 2010 and

2011. The trend also shows that there was a fall in the performance of Lafarge cement from 30% to 29% between 2012 and 2013. However, performance reduced to 10% in 2015 from 11% in 2014. The performance became very poor in 2016 with a performance of 5%. The trend above shows that over the years under study, the environmental cost was ₦17,000,000 in 2008 but became stable in 2009 and 2010 with the amount of ₦11,000,000. However, it increased from ₦121,000,000 to ₦135,000,000 between 2011 and 2012 which further increased to ₦259,000,000 in 2013. The environmental cost of Lafarge Cement increased from ₦163,000,000 to ₦191,000,000 between 2014 and 2015. In 2016, a large amount of money was incurred towards the environment with a sum of ₦757,000,000.

This section analyzed and discussed the effect of environmental cost on the financial performance of listed manufacturing companies in Nigeria using panel ordinary least square method of regression.

Table 1: Dependent Variable: ROE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EB	0.036228***	0.006431	5.633038	0.0000
DON	-0.006064	0.010677	-0.567963	0.5712
ST	0.025231**	0.007839	3.218640	0.0017
FS	-0.09087***	0.007748	-11.72866	0.000
C	1.185277***	0.281892	4.204723	0.0001
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0.679312	Mean dependent var	0.821396	
Adjusted R-squared	0.628833	S.D. dependent var	0.778521	
S.E. of regression	0.337207	Sum squared resid	12.28055	
F-statistic	13.45738	Durbin-Watson stat	1.613043	
Prob(F-statistic)	0.000000			

*** & ** represents 1% and 5% level of significance respectively.

The result in Table 1 above showed the estimation of the effect of environmental cost on the financial performance of listed manufacturing companies. The table showed that a total of 14 listed manufacturing companies were examined over a period of 9 years using the panel least square regression technique. The study used return on equity (ROE) as its dependent variable while donations, employee benefit, and staff training were used as the independent variables and firm size was used as an independent control variable. Considering the research objective of the study which states that, $ROE = \beta_0 + \beta_1 \log DON_{it} + \beta_2 \log EB_{it} + \beta_3 \log ST_{it} + \log FS_{it} + \mu_{it}$. The result shows that the probability of f-statistic is 0.000000 which indicates that the totality of the model is significant and the model has high goodness fit. The result also showed an R-squared of 0.679312 (67%) and adjusted R-Squared of 0.628833 (62%), which shows that 67% of the total variation in the dependent variable (ROE) is explained by the independent variable (Donation, Employee

Benefit, and Staff Training) while the Durbin Watson of 1.613043 shows that the result is free from serial autocorrelation problem.

The result showed that there is a positive and significant relationship between employee benefits and financial performance of the listed manufacturing companies in Nigeria. Employee benefit has a correlation coefficient value of 0.036228 and p-value of 0.0000, which implies that a unit increase in employee benefits will lead to a 3.6% increase in the financial performance of the examined manufacturing companies. The result also showed that there is a positive and significant relationship between staff training and the financial performance of listed manufacturing companies in Nigeria. Staff training has a correlation coefficient value of 0.025231 and a p-value of 0.0017, which suggests that a unit increase in staff training will lead to a 2.5% increase in the financial performance of the examined manufacturing companies. However, the result showed that there is a negative and insignificant relationship between donations and the financial performance of listed manufacturing companies in Nigeria. The donation has a correlation coefficient value of -0.006064 and a p-value of 0.5712, which implies that a unit increase in donations will lead to a 0.6% decrease in the financial performance of the examined manufacturing companies. The results suggest that employee benefits and staff training have a positive and significant effect on the financial performance of the selected listed manufacturing companies while donations have a negative and insignificant effect on the financial performance of the selected listed manufacturing companies.

Discussion

From the above analysis, the study found that there is a positive and significant relationship between employee benefit, staff training, and financial performance. This implies that there is a direct relationship between employee benefit, staff training and financial performance of manufacturing companies in Nigeria. This invariably means that the investment of manufacturing companies on employee benefit and staff training have improved the financial performance of the manufacturing companies significantly in Nigeria. However, the result analysis also reveals that there is a negative and insignificant relationship between donations and the financial performance of the sampled manufacturing companies. This invariably suggests that the investment of manufacturing companies in donations activities has a little or no effect on the financial performance of the examined manufacturing companies in Nigeria.

The study examined the effect of environmental cost on the financial performance of listed manufacturing companies in Nigeria. The study employed descriptive statistics of trend analysis to examine the pattern of the financial performance (measured by return on equity) and environmental cost (measured by employee benefit, donation, and staff training) of sampled listed manufacturing companies in Nigeria. From the trend, the study found that the financial performance of the sampled listed manufacturing companies was not stable over the period (2008-2016) under study. The study also found that the fluctuation in the financial performance of the listed manufacturing companies can be attributed to the fluctuation in the company's performance over the period under study. The analysis of the trend also revealed that the environmental variables used to measure environmental cost was unstable over the period under study.

Finally, the study revealed that there is a positive and significant relationship between firm size and financial performance of the selected manufacturing companies. This implies that increases in the size of the companies will positively affect the performance of the selected manufacturing companies. The significant and positive relationship found between environmental cost and financial performance of manufacturing companies in Nigeria is consistent with the conclusions drawn by (Bassey, Sunday and Okon, 2013; Karambu and Joseph, 2016; Pek and Luky, 2012; Nnamani, Onyekwelu and Ugwu, 2017; Akabom, 2012; Ayoib, Nosakhare and Chijoke, 2016). These studies reported a positive and significant effect between environmental cost and financial performance. The study, therefore, suggests that the practice of environmental cost will likely enhance the financial performance of listed manufacturing companies in Nigeria. However, other studies found that there is a negative and insignificant relationship between donations and the financial performance of sampled manufacturing companies. This is similar to the findings of Raymond, John & Chigbo (2016), Daniel (2013), Chaulan & Kalola (2014) and Pek & Luky (2012).

Conclusion

The study concludes that environmental cost variables (employee benefit and staff training) and firm size have a positive and significant effect on financial performance as measured by return on equity of the sampled listed manufacturing companies. The study also concludes that donations had a negative and insignificant effect on the financial performance of the surveyed listed manufacturing companies over the period (2008-2016). Based on this findings, the following recommendations were therefore put forward: Government should implement policies that will mandate companies to disclose and publish the total amount expended environmental cost incurred in their financial statement at the end of the year, and empower the Environmental Regulatory Authority to ensure compliance with these policies. Firms should implement and adopt policies that provide employees with operational and leadership training within and outside Nigeria to expose them to the best practices and improved knowledge at the international level.

Listed manufacturing companies should ensure proper management of environmental costs to enhance their financial performance over the years. This should include, among other measures, the development of an environmental cost budget as well as the facilitation of effective and efficient implementation of the budget. Given the important role of the manufacturing sector on the Nigerian economy, this is the first study of its kind investigating the impact of environmental cost on the financial performance among manufacturing firms in Nigeria using trend analysis approach.

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