ENVIRONMENTAL ACCOUNTING AND ECONOMIC DEVELOPMENT: A SURVEY OF QUOTED MANUFACTURING COMPANIES IN NIGERIA

ABSTRACT

This research paper investigated the effect of environmental accounting on the economic development of Nigeria. The datawere carefully collected from secondary sourcesand they wereprimarily used for content analysis. These were applied to the annual reports of five manufacturing companies to ascertain the level of compliance and costs associated with accounting for their environmental activities. The multiple regression analysis was used to analyze the collected data. The findings indicate that Environmental Protection Costs, Environmental Management Costs and Environmental Research and Development Costs all have a considerable effect on the gross domestic product of Nigeria. No effects, however, wereexhibited by these variables which were statistically significant. These imply that environmental accountings as enumerated above do not significantly affect economic development in Nigeria. Thus, environmental accounting as practiced by companies in Nigeria, does not play an important role in advancing the Nigerian economy. This is largely because of the fact that companies flout environmental laws in the country with impunity. These companies areaided by corrupt government officials. Government should, therefore,enhance the implementation of environmental laws in the country to make it more difficult for business organizations to avoid/evade their environmental responsibilities.

Keywords: Environmental accounting; Economic development; Environmental laws.

1. INTRODUCTION

In pursuit of economic success countries and business organizations, especially those involved in heavy industrial production engage in different activities many of which impact negatively on the environment. The production of tangible goods generates waste and contributes to the diminution of natural resources, irrespective ofthe industry or sector. The environmental consequences of industrial activities are often ignored especially in developing countries like Nigeria. Over time the environmental problems become so

obvious and serious that they can no longer be ignored. Consequently, actions are demanded by the society that organizations account for the environmental imprint of their economic activities.

Environmental accounting is a means devised by society for business organizations to account for their activities as it affects the environment. Cornnor [1] asserted that “environmental accounting is any form of accounting involving the collection, recording, and reporting of internal and external information about the financial and non-financial impact of organizational activities upon individuals, society and more generally on the physical environment”.According to Smith [2], environmental accounting is used compliant with businesses and business practices that are regarded as environmentally sound, which use organic and natural products, have tighter protection against emissions and source materials in an environmentally friendly manner.As stated by Ironkweand Success [3], the issue of environmental accounting has since taken center-stage in global discussion following the global threat of climate change.

Environmental problems affect not only the human and natural environment but also the economy. Environmental accounting provides a regulatory framework that can help to stem the activities of business organizations that are perceived to be environmentally unsustainable for society. Thus, the ability for organizations to accurately account for the effect of their activities on the environment will have implications for economic development, as it will help to highlight issues requiring actions to avert future problems. Firms are thus “persuaded” to adopt an environmentally friendly measure for their production activities that will not only enhance the bottom-line of the concerned organization but also the economic well-being of the country.

The data and information provided by environmental accounting processes are determined to be in relation to the involvement of natural resources in business activities, economic development and costs incurred due to pollution and resource degradation. Environmental accounting initiative helps to determine and create awareness regarding costs related to the environment, and in identifying the techniques for reducing and avoiding such costs[4]. However, business organizations in Nigeria tend to shun environmental accounting practices on the belief that the costs of embarking on such activities are prohibitive. Added

to the problem of apathy among business organization is the problem of lax regulation which tends to create too many loopholes in environmental laws that firms can take advantage of to avoid their responsibility to society. This has led to the pollution of sources of water for local communities and causing health related issues[5].

These environmental problems directly take its toll on the economy as has been witnessed in the Niger Delta region where the production of oil and gas continues to fluctuate as a result of violent protests by local communities and indirectly by wasteful production processes that lead to natural resources depletion. Considering the enormity of environmental challenges in Nigeria, copious amount of empirical research has been conducted to unravel the sources of the problems and proffer solutions. However, most of the previous studies focused on the effect of environmental accounting on the individual organization. This study is focusing instead on how environmental accounting practices affect economic development in Nigeria.Considering the above, this research paper will investigate the nexus between environmental accounting (with respect to the cost of preventing environmental degradation, the cost of reducing depletion of non-renewable natural resources and the cost of preventing deforestation) and the economic development of Nigeria.

2. LITERATURE REVIEW

2.1 Theoretical Framework

Several theories have been proposed by researchers to show why it is in the interest of business organizations to act responsibly in matters regarding the environment. These include the stakeholders' theory and legitimacy theory. As maintained by Freeman[6], the stakeholders of an entity are the different groups of people whom the actions or inactions of the firm affect. In the context of the present study, the decisions of the business organization as it concerns the environment affect different individuals and groups including the host community of the business, the government, the economy, and even the workers and investors.

Thus, if the organization acts in an environmentally irresponsiblemanner, the host community will be affected as their environs and sources of living/income may be negatively impacted, the government and its regulators will likely be blamed for

allowing/colluding with the organization, investors may lose their investments if the government or host community take punitive actions against the firm and the staff will not be left out. Hence, Schaltegger and Burritt [7] asserted that various stakeholders are interested in environmental information; while some are concerned about the economic consequences of a firm's influence on the environment other are interested in environmental aspects and impacts. In the opinion of Hutchinson[8] the environmental accounting help to fill the information needs of all stakeholders.

The stakeholders' theory proposed an increased level of environmental awareness and consideration by the firm which creates the need for firms to extend their corporate planning to include the non-traditional stakeholders like the environmental regulatory/policy adversarial groups soas to adapt to and take advantage of changing social and environmental demands. As pointed out byBassey, Effiok, and Eton [9], the major concern of stakeholders theory as it concerns environmental accounting is to address the environment cost elements and valuation and its inclusion in financial reports.

2.2 Concept of Environmental Accounting

Business activitiescome at a cost to the environment. Business organizations are responsiblefor the environmental cost of their activities. Hansen and Mowen[10] defined environmental costs "as costs associated with the creation, detection, remediation, and prevention of environmental degradation". According to Cornnor (1)"environmental accounting is any form of accounting involving the collection, recording, and reporting of internal and external information about the financial and non-financial impact of organizational activities upon individuals, society and more generally on the physical environment".Howes[11] defined environmental accounting as the generation, analysis, and use of monetized environmentally related information with the intention of improving corporate environmental and economic performance.

2.3 Environmental Accounting and the Economy

Just like the environmental practices of business organizations affect the economy, accounting for such environmental practices also affects the economic outcomes.

Environmental accounting is a strategic measure that can help firms to forecast the future outcome of their environmental practices and where such measure is favourable, the firm will tend to adopt such measures. Thus, when a firm embarks on remediation of the environment it has helped to pollute, this can be a source of creating employment and redistributing part of the firm's earnings to the local community (this is what the Ogoni clean- up portends and when it actually kicks off). Again, remediation activities may return resources like farmlands and bodies of water for fishing close to its original state such that such resources will become productive again.

Costs incurred in the process of environmental accounting can improve the health of local communities by improving air/water quality leading to less health-related expenditure. Furthermore, business organizations who adopt environmentally friendly production process will likely experience lower production and associated costs, lower environment related litigation costs, fewer penalties from regulators, increased goodwill from stakeholders, greater patronage from environmentally conscious customers consequently, higher income and profits. And bearing in mind that the economy benefits when business organizations flourish, it becomes obvious that environmental accounting practices do have an effect on the economy.

2.4Empirical Review

Eze, Nweze, and Enekwe[12] in their research on “the effect of environmental accounting on a developing nation: Nigerian experience”, reported that environmental accounting can be used to track environmental performance of organizations in more measurable manner. They further showed that multi-national oil companies and other extracting firms are not putting adequate effort to minimize or prevent environmental problems affecting oil producing communities in Nigeria. Hence the relationships between the parties concerned are not encouraging. They also noted that accounting for environmental cost can support an organization’s development and increase its revenue. From the above, it can be inferred that the environmental practices of companies in Nigeria affect their businesses and by extension economic sustainability.

Okafor[13]in “natural resources accounting and sustainable development: the challenge to economics and accounting profession” reported that the practice of natural resources

accounting in Nigeria is rather weak considering weak regulation of the concerned sectors. The findings also showed that the developments achieved in some countries like Nigeria so far cannot be described as sustainable because the various developmental processes have misused or over exploited the natural resources at the detriment of the environment and society. His finding points to the weak regulatory environment that makes it possible for companies to avoid/evade their environmental responsibilities.

In another study, Araoye, Ajayi, Olatunji, Aruwaji[14] examined the effect of environmental pollution on economic growth in Nigeria. Using ordinary least square method to analyze data collected from secondary sources, and showed that pollution does not have significant effect on economic growth but however recommended that fines and penalties for oil spillage and gas flaring be increased to an amount so as to deter companies from engaging in gas flaring and other environmental pollution.

Ironkwe and Success [3] in “Environmental Accounting and Sustainable Development: A Study of Niger Delta Area of Nigeria” used Chi-square and Spearman’s Rank coefficient correlation among others to analyze the relationship between environmental accounting, sustainable development and economic stability in Nigeria.Theydeduced a positive relationship and concluded that environmental accounting is necessary for sustainable development in Nigeria andshould be imbibed by all companies operating in Niger Delta area.

Beredugo and Mefor[5] investigated the impact of environmental accounting and reporting on sustainable development in Nigeria using Pearson correlation coefficient and multiple regression analyses as methods of data analyses. The findings showed that there is a significant relationship between environmental accounting and reporting and sustainable development. It thus recommended adoption of acceptable standard and ameans to show organizationstheir performance with regards to the set target on a timely basis.

Building on the review of literatures, this research paper empirically postulated the following hypotheses that track the relationship between environmental accounting and economic development in the null form:

Ho_1: Environmental Protection Costs does not significantly affect the Nigerian economy.

Ho_2: There is no significant relationship between Environmental Management Costs and the performance of the Nigerian economy.

Ho_3: Environmental Research and Development Costs do not significantly affect the Nigerian economy.

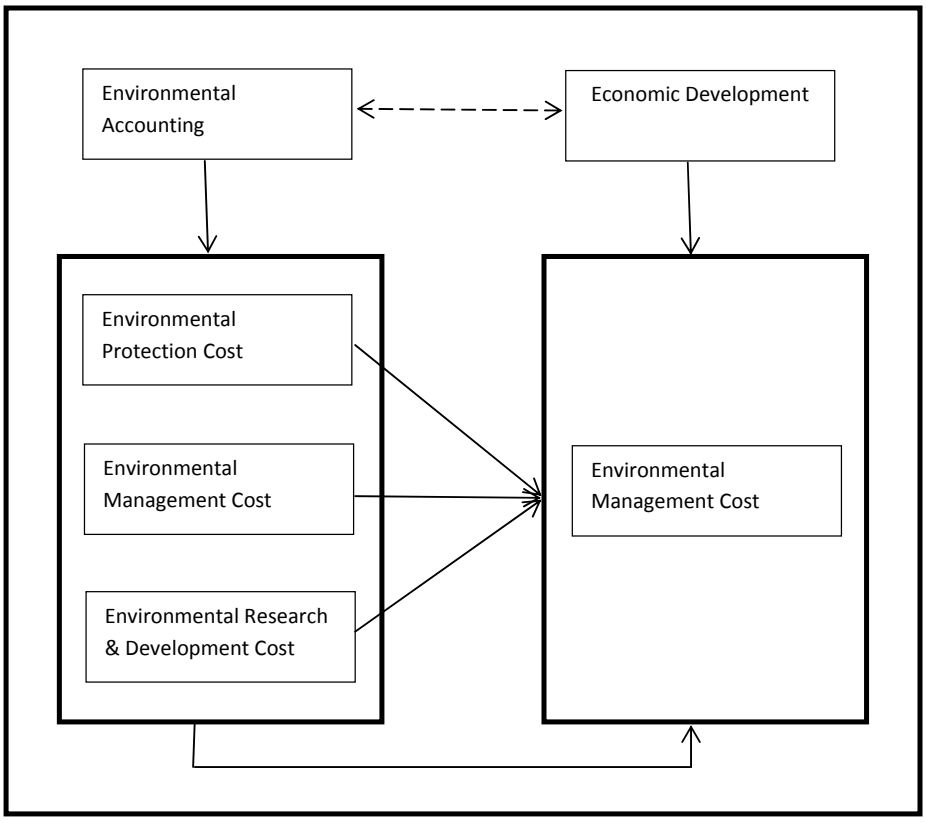

Figure 1.Conceptual framework of environmental accounting and economic development.

Source: Authors' conceptualization 2019

3. MATERIALS AND METHODS

The population of the study is the Nigerian economy but specific emphasis on quoted companies that are involved in chemical, oil and gas and other companies involved in

manufacturing activities with high material consumption and waste generation like breweries. These include Berger Paints, Lafarge, Forte Oil, Guinness and Nigeria Breweries. We collected data from the five companies using content analysis by surveying their annual reports for environmental accounting items in line with the Environmental Accounting Disclosure Index (EADI) (see the index in appendix 1). The disclosure index items will be measured against the Gross Domestic Product (GDP) which is a measure of the economy. The multiple regression analysis methods are adapted to analyze the data. From the information above, we state that:

Economic Development = f (Environmental Accounting). . . . . (1)

Where: Economic development is measured as Gross Domestic Product (GDP) and Environmental Accounting is measured as Environmental Protection Costs (ENVPRT); Environmental Management Costs (ENVMGT) and Environmental Research and Development Costs (ENVRDV). The above equation is restated in its implicit form as:

GDP = f (ENVPRT, ENVMGT, ENVRDV) . . . . . (2)

$GDP = B_0 + B_1ENVPRT + B_2ENVMGT + B_3ENVRDV + ei$ . . . (3)

Where:

GDP = Gross Domestic Product

ENVPRT = Environmental Protection Costs

ENVMGT = Environmental Management Costs

ENVRDV = Environmental Research and Development Costs

4. DATA PRESENTATION, ANALYSES AND INTERPRETATION OF RESULTS

Table 1: Model Summary for Gross Domestic Product (GDP) Environmental Protection Costs (ENVPRT), Environmental Management Costs (ENVMGT) and Environmental Research and Development Costs (ENVRDV)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.555[a]	.308	-.038	9504.6012873	1.775

a. Predictors: (Constant), ENVRDV, ENVPRT, ENVMGT

b. Dependent Variable: GDP

Source : Field Survey 2019 and Authors' Computation

Table 1 above indicates that that the strength of the relationship between gross domestic product (GDP) and Environmental Protection Costs (ENVPRT), Environmental Management Costs (ENVMGT) and Environmental Research and Development Costs (ENVRDV) is about 55.5%. This can be observed from the value of the coefficient of correlation (R) of.555. Furthermore, the coefficient of determination (R2) gave a value of .308 which means that about 30.8%% of the variations in the gross domestic product can be attributed to by variations in Environmental Protection Costs, Environmental Management Costs, and Environmental Research and Development Costs.

Table 2: Coefficients of Regression for Gross Domestic Product (GDP), Environmental Protection Costs (ENVPRT), Environmental Management Costs (ENVMGT) and Environmental Research and Development Costs (ENVRDV)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	41422.083	42583.246		.973	.368
	ENVPRT	81640.282	133287.415	.249	.613	.563
	ENVMGT	-111792.063	132349.109	-.363	-.845	.431
	ENVRDV	105085.414	100939.530	.386	1.041	.338

a. Dependent Variable: GDP

Source : Field Survey 2019 and Authors' Computation

The results in Table 2 above show that the coefficient of regression (B) for Environmental Protection Costs, Environmental Management Costs and Environmental Research and Development Costs gave values of 81640.282, -111792.063 and 105085.414 respectively. These results indicate that a unit increase/decrease in any of Environmental Protection

Costs, Environmental Management Costs and Environmental Research and Development Costs will lead to an 81,640.282, -111,792.063 and 105,085.414 increase/decrease in gross domestic product.

Furthermore, the tests of hypotheses show that the significance level(s) for the coefficients of Environmental Protection Costs (ENVPRT), Environmental Management Costs (ENVMGT) and Environmental Research and Development Costs (ENVRDV) gave values of .563, 0.431 and 0.338 respectively. This is an indication that none of the three (3) independent variables have statistically relationship with Gross Domestic Product (GDP). Thus, we conclude that none of Environmental Protection Costs (ENVPRT), Environmental Management Costs (ENVMGT) and Environmental Research and Development Costs (ENVRDV) has a significant effect on the economic development of Nigeria.

4.1 DISCUSSION OF FINDINGS

This research paper investigated the relationship between environmental accounting and the economic development of Nigeria. The findings of the research as shown in the Table 1 & 2 indicate that Environmental Protection Costs, Environmental Management Costs and Environmental Research and Development Costs all have a considerable effect on the gross domestic product of Nigeria. No effects, however, were exhibited by these variableswere statistically significant implying that environmental accountings as enumerated above does not significantly affect economic development in Nigeria.

In a similar study, Okafor[13] examined the role of natural resources accounting in sustainable development and contended that the practice of natural resources accounting in Nigeria is rather weak considering weak regulation of the concerned sectors. The findings also showed that the developments achieved in some countries like Nigeria so far cannot be described as sustainable because the various developmental processes have misused or over exploited the natural resources and in the process affected the environment

negatively. His finding points to the weak regulatory environment that makes it possible for companies to avoid/evade their environmental responsibilities.

Ironkwe and Success [3] in their study deferred from the above findings rather showing in their study that there is a relationship between environmental accounting, sustainable development, and economic stability in Nigeria and conclude that environmental accounting is necessary for sustainable development in Nigeria andshould be imbibed by all companies operating in Niger Delta area. However, Araoye et al [14] averred by concluding that pollution does not have a significant effect on economic growth but however recommended that fines and penalties for oil spillage and gas flaring be increased to an amount in order to deter companies from engaging in gas flaring and other environmental pollution.

5. CONCLUSIONS AND RECOMMENDATIONS

From the findings of this research, we can conclude that environmental accounting as practiced by companies in Nigeria does not play an important role in the growth and development of the Nigerian economy. We recommend that the government should enhance the implementation of environmental laws in the country to make it more difficult for business organizations to avoid/evade their environmental responsibilities. We also recommend that the government and its agencies in charge of implementing environmental accounting make environmental policies that companies can easily key into without incurring exorbitant costs. There is also a need to find ways to reward companies that operate in environmentally responsible manners in order to attract more companies to voluntarily operate in environmentally responsible ways. Finally, we recommend that defaulting companies be made to face very punitive measures for flouting environmental laws as a deterrence to others.

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APPENDIX 1

	ENVIRONMENTALACCOUNTING DISCLOSURE ITEMS	Yes	No
ITEM	**Environmental Protection Costs**		
1	Pollution control costs	1	0
2	Expenses on Environmentally Friendly Equipment	1	0
3	Pollution Control Systems and Policies	1	0
4	Employee Training on Environmental Protection	1	0
ITEM	**Environmental Management Costs**		
1	Employee Training on the Environmental Management	1	0
2	Environmental Pollution Remediation	1	0
3	Adherence to Environmental Best Practices	1	0
4	Environmental Programmes and policies	1	0
ITEM	**Environmental R&D Costs**		
1	Research and Development Expense	1	0
2	University Research Sponsorship	1	0
3	Active R&D Environmental Laboratory	1	0
4	New Product Research Initiatives	1	0

APPENDIX 2

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
GDP	57817.089460	9331.1156542	10
ENVPRT	.211540	.0284407	10
ENVMGT	.220120	.0302974	10
ENVRDV	.225840	.0342405	10

Correlations

		GDP	ENVPRT	ENVMGT	ENVRDV
Pearson Correlation	GDP	1.000	-.044	-.380	.470
	ENVPRT	-.044	1.000	.548	-.243
	ENVMGT	-.380	.548	1.000	-.399
	ENVRDV	.470	-.243	-.399	1.000
Sig. (1-tailed)	GDP	.	.452	.139	.085
	ENVPRT	.452	.	.050	.250
	ENVMGT	.139	.050	.	.127
	ENVRDV	.085	.250	.127	.
N	GDP	10	10	10	10
	ENVPRT	10	10	10	10
	ENVMGT	10	10	10	10
	ENVRDV	10	10	10	10

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	ENVRDV, ENVPRT, ENVMGT[b]	.	Enter

a. Dependent Variable: GDP

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.555[a]	.308	-.038	9504.6012873	.775

a. Predictors: (Constant), ENVRDV, ENVPRT, ENVMGT

b. Dependent Variable: GDP

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	241602800.380	3	80534266.793	.891	.498[b]
	Residual	542024673.787	6	90337445.631		
	Total	783627474.167	9			

a. Dependent Variable: GDP

b. Predictors: (Constant), ENVRDV, ENVPRT, ENVMGT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	41422.083	42583.246		.973	.368
	ENVPRT	81640.282	133287.415	.249	.613	.563
	ENVMGT	-111792.063	132349.109	-.363	-.845	.431
	ENVRDV	105085.414	100939.530	.386	1.041	.338

a. Dependent Variable: GDP

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	50980.042969	66791.898438	57817.089460	5181.1924880	10
Residual	-12450.9843750	11197.2773438	0E-7	7760.4744542	10
Std. Predicted Value	-1.320	1.732	.000	1.000	10
Std. Residual	-1.310	1.178	.000	.816	10

a. Dependent Variable: GDP