



Application of triple bottom line reporting model by Oil, Gas and Plastic production firms and infrastructural development in Niger Delta Region of Nigeria

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Abstract

The study determined the extent to which the application of the triple bottom line reporting model by oil, gas and plastic production firms predict infrastructural development in the Niger Delta region of Nigeria. Three purposes, questions and hypotheses guided the study. The purposive sampling technique was used to select eleven (11) oil and gas and 23 plastics production firms that constituted the sample for this study. The simple linear regression was used to answer the three research questions and to test the null hypotheses at .05 level of significance. The findings from the study showed that social, environmental and economic bottom-line reporting predicts infrastructural development by oil, gas and plastic firms in the Niger Delta Region of Nigeria. More so, social, environmental economic bottom line reporting by oil, gas and plastic production firms significantly predict infrastructural development in Niger Delta Region of Nigeria. The study concludes that the components of triple bottom line reporting used in this study are crucial variables in explaining the extent to which triple bottom line reporting by oil, gas and plastic firms predict infrastructural development in the Niger Delta Region of Nigeria. It was recommended among others that firms should adopt TBL reporting framework so as to give a holistic view of their financial and non-financial events.

Keywords: Economic Bottom Line, Social Bottom Line, Environmental Bottom Line and infrastructural development

Introduction

Firms cannot operate in isolation of the society; they get human and material resources for their operations from the society

and in turn, sell their semi-finished and finished products to the society. Businesses operate and interact with communities. Businesses' stakeholders such as suppliers,

customers, creditors, shareholders and workers are all members of the communities in which the businesses operate. This is why a social contract is assumed between businesses and their host communities. This social contract assumption is premised on the view that members of society allow businesses to operate as juristic persons, properties and employ members of the society as staff. The businesses, therefore, must enhance the well-being of the entire society even as they pursue the objective of making profits. Profit-making needs to be ethical and businesses must consider the interests of society in taking actions and decisions. However, managers of many companies have not gained a holistic understanding of the inextricable relationship between sustainability efforts and continued existence.

The Niger Delta Region has benefited from the activities of oil, gas and plastic manufacturing firms that operate in it. However, the region has also been adversely affected by the actions of some of these organisations. Billions of Naira are spent annually by government and non-government organisations to contain urban waste which essentially is made up of discarded remains or packages of products from business organisations. Toxic materials discharged from factories into streams and rivers not only destroy aquatic life but also pollute the source of water supply to the communities along the coastlines. Emissions from factories contribute significantly to air pollution (Akpan, 2004). Geophysicists say that emissions from factories are major causes of the destruction of the ozone layer and a

contributory factor to global warming with their attendant negative effects on humans.

Over the years, oil, gas and plastic production firms have negatively impacted the environment through the depletion of natural resources (timber, fish, crude oil, coal and so on) and the use of non-renewable resources in production processes and emissions of toxic wastes into the environment. In this regard, responsible business organisations need to take steps to repair the damage done to the environment and preserve it for future generations. For example, the people of the Niger Delta (oil-bearing communities in Nigeria) demand that the companies operating in the region take responsibility (clean up and compensate) for the damage done to their farmlands and fishing areas through oil prospecting and exploitation activities (gas flaring, oil spills and so on).

Reducing an environmental impact involves the development and implementation of policies for efficient resource management and alternative resources; implementation of green procurement policies; adoption of waste minimisation and waste management strategies, for example, policies on reducing pollution and waste recycling and the use of renewable resources in production processes. More so, there is an emphasis on the movement towards carbon neutrality, which is when a company can take action to deal with the pollution caused by its activities. For example, a company can plant trees that can help absorb carbon dioxide from the environment.

In addition, whether or not businesses should be responsible socially is a debate that has generated a lot of views or arguments. The

argument against social involvement was widely corroborated by a well-known economist, Milton Friedman. He argued that the primary purpose of a business is to generate sufficient returns from its economic activities to support its performance, not social activities. The proponents of this view submitted that the profit maximisation objective of a business could be weakened by socially-oriented activities.

When a business's money is spent on community activities such as training, scholarships, festivals, empowerment, among others, revenue-earning opportunities are missed. Funds spent on such activities could be better spent to improve production, advertisement or other marketing activities that will increase revenue revenue-earning capacity of an entity. A business is considered socially responsible insofar as it carries out its operations in society legally and ethically. To encourage entities to take cognizance of social and environmental issues in their business operations and reporting framework (Institute of Chartered Accountants of Nigeria, 2021).

The Global Reporting Initiative (GRI), a non-profit organisation that is recognised globally has been a leading advocate of sustainability reporting model. The reporting model emphasises the reporting of companies' performance not simply in terms of profit only but three aspects of performance namely; environmental, social and economic. Many companies in Nigeria only report their performance in terms of economic indicators (profits), while ignoring the environmental and social indicators since the regulatory

authorities are less interested in them. However, in advanced economies of the world, companies are expected to report their economic, environmental and social performances. In that way, regulatory bodies could monitor the social responsibility activities of companies. It is against this background that the study evaluates the application of the triple-bottom-line reporting model by oil, gas and plastic production firms and infrastructural development in the Niger Delta Region of Nigeria

Problem Statement/Justification

A considerable number of Niger Deltans depend majorly on farming and fishing to earn a living. However, the persistent environmental degradation through oil exploration, gas flaring and oil spillage has reduced the economic value of farmlands and water resources. Sadly, oil, gas and plastic production companies have failed to give proper attention to Niger Deltans who are suffering from the negative impact of environmental degradation due to gas flaring, oil spillage and indiscriminate dumping of plastic cans. The frequent occurrence of oil spillages witnessed in the region has negatively affected aquatic lives and sources of livelihood of the people. These companies discharge toxic industrial substances into the streams, rivers and oceans thus, exposing the people to different diseases that could increase the death rate in the region. For many, their source of livelihood, fishing ponds and farmlands have been destroyed. Water and air in the area have been polluted thereby, constituting threats to the lives of Niger Deltans. On the other hand, the companies have counted their losses due to neglect of

corporate social responsibilities. There have been reported cases of pipeline vandalism, crude oil theft, kidnapping of experts, bombing of oil installations, among others by the youths of the area as a way of expressing their frustration. These companies are often exposed to the risk of losses from payment of ransom, production stoppages, damage to oil installations and other activities of militants.

In addition, used cans and other plastic remains from industries have constituted a no mean threat in the area. Used cans and other plastic waste often obstruct the free flow of water in drainages and other water channels. This unfortunate development has increased the incidence of flooding and the resultant destruction of properties and lives in recent times. If this ugly situation is not urgently addressed, the Niger Delta Region and its people will continue to face the consequence of environmental degradation, deteriorating standard of living and poor socioeconomic development. This is gradually pushing the region to extinction. This provided a fertile ground for the evaluation of the application of the triple-bottom-line reporting model by oil, gas and plastic production firms and infrastructural development in the Niger Delta region of Nigeria.

Objectives of the Study

The main objective of the study was to determine the extent to which the application of the triple-bottom-line reporting model by oil, gas and plastic production firms predicts infrastructural development in the Niger Delta Region of Nigeria. Specifically, the study sought to determine the extent to which:

- 1) Social line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria.
- 2) Environmental line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria.
- 3) Economic line reporting by oil, gas and plastic production firms predict infrastructural development Niger Delta region of Nigeria.

Research Questions

The following research questions guided the study.

- 1) What is the extent to which social line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria?
- 2) What is the extent to which environmental line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria?
- 3) What is the extent to which economic line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria?

Hypotheses of the Study

- 1) Social line reporting by oil, gas and plastic production firms does not significantly predict infrastructural development in Niger Delta Region of Nigeria.
- 2) Environmental line reporting by oil, gas and plastic production firms does

not significantly predict infrastructural development in Niger Delta Region of Nigeria.

- 3) Economic line reporting by oil, gas and plastic production firms does not significantly predict infrastructural development in Niger Delta Region of Nigeria.

Literature Review

Conceptual Review

With the emphasis on environmental sustainability, businesses are now considering the big picture and its possible impact on the world around them. WCED (1987) explained that an important philosophy advocated today is the need for businesses to adhere to all aspects of the reporting framework to reduce the likelihood that their activities will affect global resources negatively and jeopardise sustainable development. “Sustainability accounting was first culled by John Elkington in 2004” (Sustain Ability, 2012).

It is a framework that measures the performance of companies from three perspectives namely; social, environmental and economic. Sustainable development also means triple bottom line or corporate reporting which describes economic, environmental and social impacts. The triple bottom line reporting is a United States initiative that requires companies to publish reports in line with a prescribed reporting framework on performances as regards economic, social and environmental perspectives. The Global Reporting Initiative (GRI) aims to reduce pollution in the

environment by promoting the use of renewable resources and the recycling of waste materials.

Triple-bottom-line reporting is concerned with the disclosure of a firm’s performance in all areas to all concerned stakeholders (Emeka-Nwokeji, 2019). Likewise, Triple Bottom Line (TBL) reporting is a framework used in accounting to expand stakeholders’ knowledge of companies’ activities. It extends beyond the regular economic aspect and reveals a business’s impact on the environment in which it operates. There are three main perspectives of TBL: economic, environmental and social (Global Reporting Initiative, 2006). It is an effort to integrate economic, environmental and social considerations into an entity’s reporting and decision-making processes (Wang & Lin, 2007).

This type of report establishes principles by which an entity should operate to concentrate on the total effect of their actions (both positive and negative). One of the best ways of assessing an entity’s financial performance is by the use of financial ratio analysis such as Earnings Per Share (EPS) of the firm. TBL reporting, therefore, goes beyond reporting to shareholders through financial statements to reporting the impact of the firm on society economically, socially and environmentally. This is shown in Figure 1 below

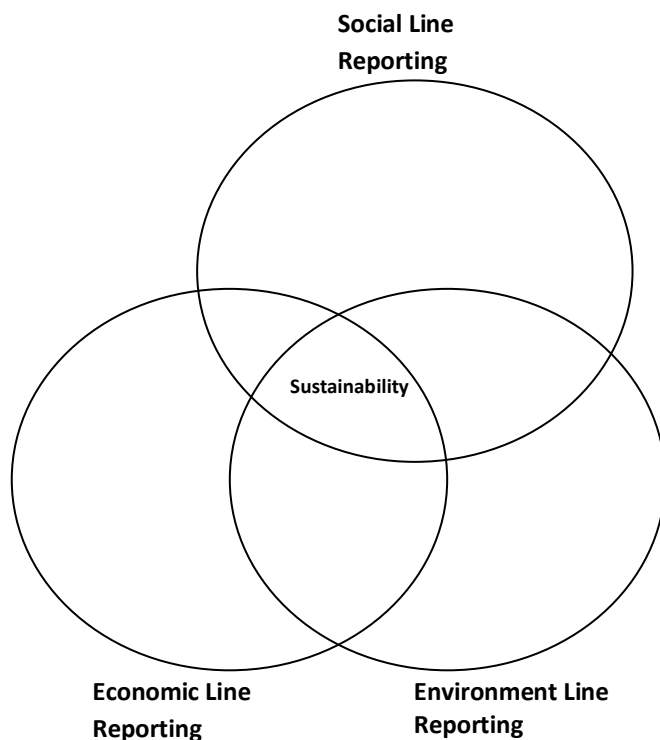


Figure 1: Triple Bottom Reporting Model
Source: Authors' conceptualisation (2023)
The model above shows that when a firm's report focuses on social, economic and environmental perspectives, sustainability will be achieved.

Environment (Planet)

There is a need for proper identification of environmental costs incurred in an entity. The identification and measurement of the environmental performance of an entity does not depend only on financial data but also on non-financial data such as pollution ratio. The quantification of environmental information in monetary terms may not be accurate but financial experts could provide a reliable estimate. The environment line is assessed in terms of energy used, water

quality, waste generated, recycled materials used, air quality, among others. It focuses on the reduction of environmental footprint, greenhouse gas, efficient use of resources and so on.

Economic (Profit)

The economic line could be measured using monetary variables. These include sales revenue, returns on capital employed, taxes paid, profit margin, finance costs, among others. Also, industrial-specific measures can be used to measure the economic activities of an entity. For example, in the manufacturing industry direct material cost, direct labour cost, direct expenses, factory cost, number of production runs, number of machine hours, number of inspections, among others can be used to measure the

Theoretical Framework

The following theories formed the framework of the study.

Stakeholder Theory

The stakeholder theory was propounded by Edward Freeman in 1984. The stakeholder theory states that an organisation must create value not only for shareholders but also for other stakeholders. For an organisation to ensure long-term survival and success it has to maintain a healthy relationship with key stakeholders. An organisation's stakeholders include suppliers, customers, communities, government agencies, shareholders, environmental groups, among others. The relevance of this theory to the current study is that a company needs to identify the needs, influence and interests of various stakeholders

and seek various ways of meeting them in order to build trust, loyalty, encourage ethical behaviour and promote sustainability.

Legitimacy Theory

The legitimacy theory states that an entity needs to operate within the prescribed social norms, beliefs and values of the host community. An organisation must at all times act most desirably. If there is a significant gap between social expectations and the organisation's actions, the sustainability of the organisation could be threatened. The relevance of this theory is that when an entity adheres to this theory, it will guarantee its long-term sustainability.

Empirical Review

Burhan and Rahmanti (2012) studied thirty companies that are listed on the Indonesian Stock Exchange (ISE) between 2006 to 2009 and determined the relationship between economic, social and environmental bottom lines and companies' performances. The findings from the study revealed that sustainability reporting influences companies' performances. Haixia and Jianping's (2023) study focused on 531 heavily polluting enterprises from 2008 to 2019. The findings reveal a significant relationship between 'environmental Disclosure (ED) and the financial performances of companies.

Asoalu *et al.* (2011) also undertook a study in Nigeria that assessed TBL reporting in the Nigeria oil and gas sectors. This research used content analysis of annual reports to examine the extent of the sampled companies' reporting compliance with global best practices. The finding however revealed an

'arbitrage' and 'incompatible SR indicators among the sampled companies in Nigeria. Similar studies and methodology were carried out, and utilized, respectively, by Folashade *et al.* (2016), but with Lafarge Africa Plc as a case. It found no single disclosure of human rights matters; 3% disclosure of environmental matters; and a total of 30% disclosures when scaled against GRI's G4 version, and 169 indicators used. However, Asuquo *et al.* (2018) adopted a methodology, but with a different sampled case - selected quoted Brewery Firms in Nigeria for the five years between 2012 – 2016 found the contrary, that Economic Performance disclosure, social performance disclosure, and environmental performance disclosure have no significant effect on corporate performance (as measured by ROA).

Dilling (2010) examined for any significant difference with regards to companies' performance (measured by size, financial welfare, capital structure, and corporate governance) between those that publish their TBL reports in line with GRI's guidelines – G3 version, to those that do not. It undertook this by analyzing the quantitative and qualitative variables of 124 randomly sampled G3 reporting and non-G3 reporting companies from selected 25 countries. It found that companies with the feature of being geographically domiciled in Europe, active in the energy and manufacturing sector, and earning high returns, are more likely to comply with GRI G3 guidelines, in dishing out sound TBL reports. Arvidsson's (2011) study in Sweden utilized the questionnaire survey design with 22 sampled Investor-Relation Managers (IRMs) from 27 OMXS30

index large companies listed on the Stockholm Stock Exchange (SSE) as respondents. It aimed to analyze management teams' views as they relate to the diverse components of disclosure of Non-Financial Information (NFI) in the annual reports. It found, among others, an increased focus on corporate NFI disclosure (especially as it relates to intangible assets). Onyali (2014) utilized a similar methodology (and had 56 registered chartered Accountants at Awka District Society, Nigeria, as respondents) to examine for a relationship between 'TBL Accounting' and sustainable corporate performance. She found such 'nexus' to exist and indicated that the disclosure of TBL would ensure the identification, measurement, and allocation of environmental and social costs within an organization.

Also, Carreira, Damiao, Abreu and David (2014) carried out research that assessed the items published in the annual reports of firms listed on the Lisbon Euronext Stock Market (LESM) between 2007 – 2009 and had similar findings as Arvidsson (2011), of an improved 'Environmental Disclosure Index' for each firm over time. TBL reporting was also assessed among six randomly selected food and beverage firms in Nigeria by Isa (2014). He utilized content and cross-sectional analysis, as data were obtained and the annual reports and accounts of the sampled firms. The finding revealed poor and insignificant (approximately 2% of the total) disclosures in the firms' annual reports. Of this, it revealed that 20.40% represented environmental activities related disclosure; and 12.84% represented human rights (social

activities) related disclosures. The finding also revealed the TBL disclosure rate is dependent on the size of firms.

Kolk (2003) equally examined the trends in TBL reporting by Fortune Global (250). The presentation of their trend and panel data in 1998 and 2001 revealed significant progress in TBL reporting, especially in Japan and Europe. It was discovered that TBL reporting is more adopted by large multinationals, which is attributed to their high impact and visibility; as against trade and retail, services, and media and communication outfits, that reported less than average TBL for 1999, 2002, and 2005 focus years.

Methodology

The *ex-post facto* research design was adopted for the study. The study was conducted in Nigeria. The population of this study consisted of all the twelve (12) oil and gas companies listed on the Nigerian Exchange (NGX) Group as of 31st December 2023 and 37 plastics companies in the Niger Delta Region. The sample size of this study comprised eleven (11) listed oil and gas firms on the Nigerian Exchange (NGX) Group from 2011 to 2023 and 23 plastics companies. The purposive sampling technique was adopted to select oil and gas companies that consistently filed their annual reports with the Nigerian Exchange (NGX) Group for the study period (2011-2023).

The study made use of secondary data which were extracted from the annual reports and statements of account of the sampled companies.

The research questions were answered using the R-value of the simple linear regression

model to determine the extent to which the triple bottom line reporting model by oil, gas and plastic production firms predicts infrastructural development in Niger Delta Region of Nigeria. Statistical correlation is measured by what is called the coefficient of correlation (r). Its numerical value ranges from +1.0 to -1.0 . It gives an indication of both the strength and direction of the prediction between variables. In general, $r > 0$ indicates a positive relationship, $r < 0$ indicates a negative relationship and $r = 0$ indicates no relationship (or that the variables are independent of each other and not related). Here, $r = +1.0$ describes a perfect positive correlation and $r = -1.0$ describes a perfect negative correlation. The correlation coefficient values and their associated nature of relationship as suggested by Wilson (2009) were adopted as guidelines for interpreting and making decisions concerning the research questions as follows:

Value of R Strength of Relationship

0.51 to 1.0- Very High Positive Relationship (Strong Prediction)

0.3 to 0.5-High relationship (Moderate Prediction)

0.1 to 0.3-Low relationship (weak Prediction)

0.5 to 1.0-Very High Relationship (Strong Prediction)

0.5 to -0.3 -High relationship (moderate Prediction)

0.3 to -0.1 -Low relationship (weak Prediction)

The null hypotheses were determined with a P-value.

R^2 -values indicated the strength of linear association/prediction. The null hypotheses were considered significant when observed P-values were less than or equal to .05 ($P \leq .05$) and H_0 was rejected, but when the P-value exceeded .05, F-statistics was not significant and H_0 was retained.

Data Analysis and Discussion

Research Question One

What is the extent to which social reporting by oil, gas and plastic production firms predicts infrastructural development in Niger Delta Region of Nigeria?

Table 4.1 Simple linear regression analysis of the extent to which social bottom line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria

Variables	R	R ²	Remark
Social bottom Line Infrastructural Development	0.692	0.479	Very High

The result in Table 4.1 revealed the values of R (Strength of relationship) and R²(coefficient of determination) between social bottom line reporting and infrastructural development by oil, gas and plastic production firms in Niger Delta Region of Nigeria. The R-value of 0.692 revealed a very high relationship between social bottom line and infrastructural development. This implies that social bottom-line reporting by oil, gas and plastic production firms in Niger Delta Region of Nigeria predicts infrastructural development

to a high extent. The calculated R² of .479 which is the coefficient of determination indicates that only (47.9%) infrastructural development is predicated by social line reporting.

Research Question Two

What is the extent to which environmental bottom-line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria?

Table 4.2 Simple linear regression analysis of environmental bottom line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeri

Variables	R	R ²	Remark
Environmental bottom line Infrastructural Development	0.744	0.553	Very High

The result in Table 4.2 revealed the values of R (Strength of relationship) and R²(coefficient of determination) between environmental bottom line and infrastructural development by oil, gas and plastic production firms in Niger Delta Region of Nigeria. The R-value of 0.744 revealed a very high relationship between environmental bottom line and

infrastructural development by oil, gas and plastic production firms in Niger Delta Region of Nigeria. This implies that environmental bottom line reporting by oil, gas and plastic production firms in Niger Delta Region of Nigeria to a high extent. The calculated R² of .553 which is the coefficient of determination indicates that (53.3%) infrastructure development is

predicated by environmental bottom line reporting.

Research Question Three

What is the extent to which economic bottom line reporting by oil, gas and plastic

production firms predict infrastructural development in Niger Delta Region of Nigeria?

Table 4.3 Simple Linear Regression analysis of the extent to which economic bottom line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria

Variables	R	R ²	Remark
Economic Bottom Line	0.832	0.693	Very High
Infrastructural Development			

The result in Table 4.3 revealed the values of R (Strength of relationship) and R²(coefficient of determination) between economic bottom line and infrastructural development by oil, gas and plastic production firms in Niger Delta Region of Nigeria. The R-value of 0.832 revealed a very high relationship between economic bottom line and infrastructural development by oil, gas and plastic production firms in Niger Delta Region of Nigeria. This implies that economic bottom line reporting by oil, gas and plastic

production firms in Niger Delta Region of Nigeria to a high extent. The calculated R² of .693 which is the coefficient of determination indicates that (69.3%) of infrastructure development is predicated by environmental bottom-line reporting.

Research Hypothesis One

Social bottom line reporting by oil, gas and plastic production firms does not significantly predict infrastructural development in Niger Delta Region of Nigeria.

Table 4.4: Simple linear regression Analysis of the extent to which social bottom line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	45.524	1	45.524	42.352	.000 ^b
Residual	49.433	46	1.075		
Total	94.957	47			

The results showed that the P-value was 0.00, F-ratio = $42.352 < 0.05$ at df 1 and 46. With this result, the null hypothesis which stated that social bottom-line reporting by oil, gas and plastic production firms does not significantly predict infrastructural development in Niger Delta Region of Nigeria is rejected. This implies that social bottom-line reporting by oil, gas and plastic production firms significantly predicts

infrastructural development in Niger Delta Region of Nigeria

Research Hypothesis Two

Environmental line reporting by oil, gas and plastic production firms does not significantly predict infrastructural development in Niger Delta Region of Nigeria.

Table 4.5: Simple linear regression analysis of the extent to which environmental line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	52.511	1	52.511	56.892	.000 ^b
Residual	42.446	46	.923		
Total	94.957	47			

The results showed that the P-value 0.00, F-ratio = $52.511 < 0.05$ at df 1 and 46. With this result, the null hypothesis which stated that environmental bottom line reporting by oil, gas and plastic production firms does not significantly predict infrastructural development in Niger Delta Region of Nigeria is rejected. This implies that environmental bottom line reporting by oil, gas and plastic production firms

significantly predicts infrastructural development in Niger Delta Region of Nigeria.

Research Hypothesis Three

Economic line reporting by oil, gas and plastic production firms does not significantly predict infrastructural development in Niger Delta Region of Nigeria.

Table 4.6: Simple linear regression analysis of the extent to which economic bottom line reporting by oil, gas and plastic production firms predict infrastructural development in Niger Delta Region of Nigeria.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	65.783	1	65.783	103.76	.000 ^b
Residual	29.174	46	.634		
Total	94.957	47			

The results showed the P-value 0.00, F-ratio = $103.76 < 0.05$ at df 1 and 46. With this result, the null hypothesis which stated that economic bottom line reporting by oil, gas and plastic production firms does not significantly predict infrastructural development in Niger Delta Region of Nigeria is rejected. This implies that economic bottom line reporting by oil, gas and plastic production firms significantly predicts infrastructural development in Niger Delta Region of Nigeria.

Discussion of Findings

The result from research question and hypothesis one showed that social bottom line reporting by oil, gas and plastic production firms in Niger Delta Region of Nigeria predict infrastructural development to a high extent and that social bottom line reporting by oil, gas and plastic production firms significantly predict infrastructural development in Niger Delta Region of Nigeria. This finding implies that providing a report on an entity's social activities will facilitate infrastructural development. This finding aligns with the finding of Burhan and Rahmanti (2012) who found that sustainability reporting influences companies' performances. More so, the social theory of corporate governance emphasised that an entity has a responsibility to all stakeholders in the community in which it operates. Therefore, it is appropriate to report to the stakeholders the extent to which this responsibility is discharged. Businesses need to provide support in various areas to the societies where they operate because

they make their profits from the society. A business could provide pipe-born water, good road networks, scholarships, hospital facilities, school facilities, among others for the society. These amenities when provided by businesses for community use, help to enhance the standard of living and general well-being of community members. More so, there is a need for companies to adhere strictly to ethical standards when dealing with the members of society.

The result from research question and hypothesis two shows that environmental bottom line reporting by oil, gas and plastic production firms predicts infrastructure development in Niger Delta Region of Nigeria to a high extent and that environmental bottom line reporting by oil, gas and plastic production firms significantly predict infrastructural development in Niger Delta Region of Nigeria. This finding is related to the finding of Haixia and Jianping's (2023) whose finding revealed that there is a significant relationship between 'environmental Disclosure (ED) and the financial performances of companies. Kolk (2003) discovered that TBL reporting is more adopted by large multinationals, which is attributed to their high impact and visibility; as against trade and retail, services, and media and communication outfits, that reported less than average TBL. Businesses need to operate in a manner that will sustain the physical environment. They need to avoid the discharge of obnoxious substances into farmland, rivers, the atmosphere and the ocean. Modern business organisations are

striving towards carbon neutrality where a business seeks to undo the damage its operational activities have done to the environment and seek ways of reusing waste materials and renewable energy resources. In addition, an organization could engage in the planting of trees that could help absorb carbon dioxide from the atmosphere.

The result from research question and hypothesis 3 showed that economic bottom line reporting by oil, gas and plastic production firms in Niger Delta Region of Nigeria to a high extent and that economic bottom line reporting by oil, gas and plastic production firms significantly predict infrastructural development in Niger Delta Region of Nigeria. This finding corroborated the finding of Onyali (2014) who found a nexus between TBL and identification, measurement, and allocation of costs. The economic bottom line is very crucial for the survival of a business organisation. A business organisation needs to make sufficient profit to meet important financial obligations such as company tax, administrative cost, finance cost, selling and distribution cost, among others. The economic bottom line could be measured using various indicators. These include return capital employed, net profit margin, return on asset, inventory turnover, cash flow statement, among others.

Conclusion

Based on the findings of the study, it is concluded that companies need to prepare and present comprehensive reports at all times to stakeholders. TBL reporting

model could help companies to provide information on both financial and non-financial aspects of the operations of an organisation which could help to endear it to customers, shareholders and other stakeholders. The components of triple bottom line reporting used in this study are crucial variables in explaining the extent to which triple bottom line reporting by oil, gas and plastic firms predict infrastructural development in the Niger Delta Region of Nigeria

Recommendations

The following recommendations were made in line with the findings and conclusion of this study:

- 1) Firms should adopt TBL reporting framework so as to give a holistic view of their financial and non-financial events. This could improve an entity's transparency rating which could endear to investors, potential customers and other stakeholders.
- 2) Firms should undertake more social responsibilities in the communities where they operate to strengthen their relationship with stakeholders. This will help to improve corporate image and competitive edge.
- 3) Firms should consistently provide a comprehensive report on how they deal with environmental issues in the communities where operate. This will ensure that they remain carbon-neutral in their operations.

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Declaration of competing interest

We the authors hereby declare that we have not known any competing financial interests or personal relationships that could have influenced this research work.

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