

1-1-2022

Environmental Accounting and Financial Performance of Listed Family-Owned Companies in Nigeria

Charles Segun Illelaboye
Adekunle Ajasin University

Muyiwa E. Alade
Adekunle Ajasin University

Follow this and additional works at: <https://digitalcommons.du.edu/irbe>



Part of the [Business Commons](#), and the [Economics Commons](#)

Recommended Citation

Illelaboye, Charles Segun and Alade, Muyiwa E. (2022) "Environmental Accounting and Financial Performance of Listed Family-Owned Companies in Nigeria," *International Review of Business and Economics*: Vol. 6: Iss. 1, Article 18.

DOI

<https://doi.org/10.56902/IRBE.2022.6.1.3>

Available at: <https://digitalcommons.du.edu/irbe/vol6/iss1/18>

This Article is brought to you for free and open access by Digital Commons @ DU. It has been accepted for inclusion in International Review of Business and Economics by an authorized editor of Digital Commons @ DU. For more information, please contact jennifer.cox@du.edu, dig-commons@du.edu.

Environmental Accounting and Financial Performance of Listed Family-Owned Companies in Nigeria

Abstract

This study examines the effect of environmental accounting on the performance of family-owned companies in Nigeria using restoration cost, community development costs and health & security costs as surrogates. The study used ex-post facto research design. The population of the study consisted of all 12 family-owned companies across industrial and oil & gas sectors that were quoted on the Nigerian Stock Exchange (NSE). Purposive sampling technique was used to select six (6) family-owned companies that disclosed environmental information. Data were gleaned from the annual reports of the sampled companies covering 2012-2020. The study used descriptive statistics, correlation and Ordinary Least Squared techniques for data analysis. The findings showed that restoration cost has a negative and insignificant effect on the financial performance, and community development cost has a negative and significant effect, while health safety cost has a positive and insignificant effect on financial performance. The study concludes that only health safety costs have the potential to increase the performance of family-owned companies in Nigeria. The study recommends that payment of health and safety costs should be sustained. Furthermore, stakeholders in the companies should constitute a "Trust Fund Trustees" that will handle community development costs for fairness and accountability.

Keywords

Nigeria, family-owned, environmental accounting, performance, restoration cost

Environmental Accounting and Financial Performance of Listed Family-Owned Companies in Nigeria

Charles S. Illelaboye, Muyiwa E. Alade
Adekunle Ajasin University

Abstract

This study examines the effect of environmental accounting on the performance of family-owned companies in Nigeria using restoration cost, community development costs and health & security costs as surrogates. The study used ex-post facto research design. The population of the study consisted of all 12 family-owned companies across industrial and oil & gas sectors that were quoted on the Nigerian Stock Exchange (NSE). Purposive sampling technique was used to select six (6) family-owned companies that disclosed environmental information. Data were gleaned from the annual reports of the sampled companies covering 2012-2020. The study used descriptive statistics, correlation and Ordinary Least Squared techniques for data analysis. The findings showed that restoration cost has a negative and insignificant effect on the financial performance, and community development cost has a negative and significant effect, while health safety cost has a positive and insignificant effect on financial performance. The study concludes that only health safety costs have the potential to increase the performance of family-owned companies in Nigeria. The study recommends that payment of health and safety costs should be sustained. Furthermore, stakeholders in the companies should constitute a "Trust Fund Trustees" that will handle community development costs for fairness and accountability.

Keywords: Nigeria; Family-owned; environmental accounting; performance; restoration cost

Introduction

Companies play a lot of vital roles in the economic development of any nation and often, their economic activities constitute a great discomfort to their immediate environments. Their activities impound serious health challenges that often culminate to social disputes and disruptions of economic activities of companies and, by extension, affect performance (Okegbe & Ofurum, 2019). In the past, corporate organizations placed much emphasis on profitability, without recourse to the environment in which they operate. According to Field and Field (2002), depletion and degradation were not given desired attention until well-meaning people in the developed nations realised that it was not good to have corporations profiting at the expense of the environment in which they operated. The major concern now is that degradation, pollution and destruction of ecosystems will soon become very dangerous to the human existence.

In recent times, companies are seen seriously polluting their environment in the production process. Under Nigeria Law section 41 of the Federal Environmental Protection Agency (FEPA) Act Cap F10 laws of the Federation 2002, pollution is defined as a man-made or man-aided alteration of the chemical, physical or biological quality of the environment to the extent that is detrimental to the environment. Ndifon, Orok and Sackey (2014) claim that a major challenge in the world is now systemic destruction of the environment, which has the capacity to destroy the entire world if not quickly nipped in the bud.

To mitigate this negative impact, various laws and regulations were enacted to control environmental problems in Nigeria. With these laws and regulations, companies are expected to be conscientious and exhibit a high sense of responsibility by correcting the negative impact of their operations on the environment and the society at large. Among bodies created, according to Suleiman (2007), were the Federal Environmental Protection Agency (FEPA) in 1988 through decree no 58, the Environmental Impact Act in 1992, the National Environment Standards and

Regulations Enforcement Agency (NESREA) Act in 2007, National Guidelines and Standards for Environmental Pollution Control of 1991, National Effluent Limitations of 1991, waste management regulations of 1991 and other regulations that could protect environment and its national resources.

Despite having these laws and regulations in place, it seems that environmental degradation, emissions, noise, and pollution of different kinds keep on increasing which often culminate to health hazards, disturbance of land and marine ecosystem, economic problems and disputes between firms and host communities, which thus affect firms' financial performance. Emakponuzo and Udih (2015) attributed non-compliance around these regulations to weak infrastructure, technology deficits and high levels of corruption in the society, while Suleiman (2007) attributed it to enforcement problems, indiscipline, outdated environmental laws, and leniency of existing laws. The attitude of several firms not to take environmental costs into consideration makes financial performance below expectation (Sengottuvel, 2018).

Family-owned companies play critical roles in the industrial, oil, and gas businesses and therefore are contributing to degradation and environmental pollution of different kinds in Nigeria. As pointed out by Norfarah (2017), a family-owned business refers to a commercial organization in which decision-making is influenced by multiple generations of family either related by blood, marriage or adoption. Shankar and Astrachan (1996) note that criteria used to define family business include percentage of ownership, voting control, power over strategic decisions, active management of family members, and involvement of multiple generations in the business. A situation whereby the founder of the company is the Chief Executive Officer (CEO) or the successor of the CEO either by blood or marriage, or in which family directors have direct or indirect shareholdings of at least 20% in the company qualifies business to be a family owned (Bartholomeuz & Tanewski, 2006).

Quite a number of scholars, such as Nwaimo (2020), Iliemena (2020), Anselm and Janefrances (2020), Oshiole, Elama and Ndubuisi (2020), Agboola and Oroge (2019), Onuora and Christian (2019), and Magara, Aming and Momanyi (2015), have contributed to the wealth of knowledge on environmental accounting, with concentration on multi-corporations, companies, and conglomerates like Chevron Oil, Shell Oil, Exxon Mobil Oil, Total Oil, Guinness PLC, Coca-Cola, etc., while little is known about family-owned businesses, particularly in Nigeria. Some scholars have argued in support of positive association among the explanatory variables, while others argue to the contrary. This dissimilar result heightens researcher's curiosity for further studies. In light of this inconclusiveness, this paper examines the effect of environmental accounting on the financial performance of listed family-owned companies in Nigeria, with specific attention to the costs of environmental restoration, community development and employee health & safety.

The outcomes of this study are intended to assist the management of family-owned companies to put in place additional measures that will guarantee sustainable development and mitigate environmental impact.

Conceptual Review

This section discusses the concepts and perceptions about the scope and the structure of the problem. The section succinctly explains the surrogates of dependent and independent variables.

Financial Performance

According to Farrukh and Faizan (2016), the word "performance" originates from the old French word called "parfournir" meaning to carry out, to bring forth, or to bring through. Conceptualising the word "performance" has been viewed from different dimensions. From the perspective of Beaver (2006), performance is equivalent to the famous 3E's (economy, efficiency, and effectiveness) of a certain program. According to Afemikhe (2003), economy involves evaluation, comparison, and assessments of the administrative activities, practices and

management policies. Efficiency makes sure that the maximum useful output is gained from the resources devoted to each activity, while effectiveness ensures that the output from any given activity is achieving the desired results. Therefore, organizational performance describes an organization's ability to attain its goals by using resources in an efficient and effective manner (Baum, Calabrese & Silverman, 2000).

According to Birley and Westhead (2013), organizational performance is the ability of an organization to achieve its goals and objectives. From the study of Nwaimo (2020), performance of a firm is pointed out to three specific areas. These areas are financial performance, market performance, and shareholders returns. Financial performance refers to the level in which the financial health of an organization is being measured over time (Farrukh & Faizan, 2016). This is carried out to give stewardship accounting to the owners of the business (shareholders) by the management. Hence, financial performance could be viewed from the difference between the starting point of a business concern and the target points within a space of time.

According to Magara, Aming and Momanyi (2015), financial performance could be measured in different ways, including profitability, market share growth, return on investment (ROI), return on equity (ROE), and liquidity. The Institute of Chartered Accountants of Nigeria Study Pact (2006) averred that the financial performance of a firm could be computed in various ways, like net profit margin (NPM), gross profit margin (GPM), earning per share (EPS) and other performance measures. In this study, financial performance was measured by returns on capital employed (ROCE).

Return on Capital Employed (ROCE)

As captured by Monica (2014), ROCE establishes the relationship between profit and capital employed by the firm. It measures the earning power of the net assets of the firm. Chukwuma (2015) viewed ROCE as percentage returns generated by total funds employed to finance the operation of a company during the accounting period. ROCE indicates the efficiency and profitability of a company's capital investment. According to Sengottuvel (2018), ROCE is expected to be higher than the rate in which company borrows. A company that is highly geared tends to reduce shareholder earnings.

Environmental Accounting

Environmental accounting surfaced in the 70's as a result of an increase in environmental awareness and concerns about social and environmental wellbeing (Khalid, Lord & Dixon, 2012). Hussain et al. (2016) opined that environmental accounting started with a period of improbability, and its development was categorised into four stages. The first (1970-1980) witnessed the beginning of the first research in the area of environmental accounting, which was characterised by descriptive character. In 1981-1984, debate regarding the disclosure of environmental accounting ensued. During this period, researchers' interests became to wax stronger and more attentions were devoted to issues on environmental accounting. Between 1995 and 2001, EA reached the maturity stage as environmental audit was launched. This concept was now discussed both theoretically and practically in developed nations. The fourth stage (2002-current) witnessed the period where environmental laws and regulations were issued. Since then, the quality of articles from this field continue to grow and more contributions to the development of EA were brought to fore.

Environmental accounting, therefore, represents a subsection of accounting that identifies and measures the costs of environmental activities for management decisions with the aim of mitigating negative environmental activities. Environmental accounting has been defined by various researchers and authors in different ways. Howes (2002) defined environmental accounting as the generation, analysis and use of environmentally related information to enhance corporate environmental and economic performance. In other words, environmental accounting is seen as a way in which environmental costs are incorporated into the variety of accounting practices. Hansen and Mowen (2000) viewed environmental accounting as costs that are associated

with the creation, detection, remediation, and prevention of environmental degradation. Gray, Owen and Adams (1996) perceived environmental accounting principally as preparation, presentation, and communication of an organization's information to their natural environment.

Environmental Restoration Cost

Iheduru and Chukwuma (2019) viewed environmental costs as costs incurred for breaching environmental laws and company policies. These are costs incurred to comply with regulatory standards which must have been incurred in a bid to reduce or eliminate release of hazardous substances and corporate practices aimed at reducing environmental impacts of a company's operation (Chinedu, Udama & Ali, 2019). As posited by Agboola and Oroge (2019), these costs have to do with all allocated costs of preventing, reducing, and avoidance of environmental impact, removal of such impact and restoration of environment to its original state. Emeakponozo and Udih (2015) gave a broader explanation of these costs, to include waste treatment and disposal, cost of poor environmental reputation, repair and maintenance, and cost of paying an environmental risk premium.

Community Development Costs

According to Anselm and Janefrances (2020), social responsibility encourages firms to balance environmental responsibilities with profits. Community development ideas, as explained by Etale, Ochuba and Sawyerr (2021), emanated from the principle of social responsibility, and these costs as sacrifices to the society. Mensah, Agyapong and Nuertey (2017) argued that agitation for clean environment by the host communities propelled several companies to implement a wide range of Corporate Social Responsibility (CSR) practices. Egbunike and Okoro (2018) opined that environmental cost involves probable social cost emanating to the environment as a result of production externalities. Such cost, according to Che-Ahmad, Osazuwa and Mgbame (2016), should be included in the firm's costs and reflected in the books rather than perceiving it as an opportunity cost for corporate profiteering. Community development costs are incurred within and outside the host communities. Examples of these costs, according to Nwambeke et al. (2019), are building or renovation of schools, building of hospitals, construction of roads, and so on.

Employee Health and Safety Costs

In the conduct of business operations, employees are exposed to environmental pollution and other environmental health-related challenges. In view of this, companies are expected to make provisions for protection of human lives, avoidance of accidents, and preventions against all forms of disability within the environment. An environmental health and safety cost is the cost expended in caring for the safety and health of the workers, including the cost of securing the environment (Chinedu, Udama & Ali, 2019). Health and safety cost dwells on securing and promoting safety and health of staff, both physical and mental. Safe workplaces are profitable workplaces and, as such, activity should be carried out to preserve the health of employees, sub-contractors, and the general public (Oshiole, Elama & Ndubuisi 2020). This assertion soon gave rise to stakeholders' theory.

Theoretical Review

This paper was guided by two theories that explained the interactions between environmental accounting and the financial performance of family-owned companies: stakeholders' theory and polluters pay principal theory (PPP).

Stakeholders' Theory

Jensen and Meckling (1976) viewed the firm as a nexus of contacts between different stakeholders. This theory perceives organizations as systems that take into consideration not only the interest of the owners, but also the interests of other groups within the environment in which the business operates. The use of this theory was demonstrated in the studies of Olasupo and Akinyelure (2017); Iheduru and Chukwuma (2019); Bassey, Effiok and Eton (2013); and Che-Ahmad, Osazuwa and Mgbame (2016).

Polluters Pays Principle (PPP) Theory

As captured in the work of Chukwuma (2015), PPP first surfaced in the recommendation of Organisation for Economic Co-operation and Development (OECD) in 1972 and was re-affirmed in 1992. PPP was laid down in Principle 16, which provides for internalization of environmental cost by taking into account that the polluter should bear the cost of pollution, with due regard to public interest and without distorting international trade and investment. However, PPP does not only cover pollution prevention and control measures, but also covers liability in terms of clean-up costs. PPP theory believes that if a corporate firm accounts for and discloses their environmental costs, it will boost the confidence and good image of the firm, which will eventually increase performance.

Both theories are relevant to this work. The study was premised on stakeholders' theory. This is based on the fact that organizations cannot exist in isolation without relating to their immediate environments and hence, the interest of other stakeholders must be accommodated for in the process of strategic decision making. The main concern of this theory in environmental accounting is to ensure that the environmental costs are provided for in the financial statements, because peace and harmony exist in a safe and secured environment. Therefore, it could be concluded, within the realm of this theory, that the key notion of stakeholders' theory is fairness and accountability.

Empirical Review

Oshiole, Elama and Ndubuisi (2020) investigated the effect of environmental disclosure of listed oil and gas firms in Nigeria using employees' health and safety costs and environmental remediation cost as proxies of investigation spanning 2010 to 2019. Correlation and Panel Least Square (PLS) regression analysis were used to test the hypotheses of the study. The findings showed that environmental health and safety costs and environmental remediation costs have positive and significant effects on the financial performance of the sampled companies. Nwaimo (2020) examined the effect of environmental costs on the performances of 64 industrial firms in sub-Saharan Africa, covering South Africa, Nigeria, Ghana, and Tanzania between 2007 and 2016, using remediation and community development cost as proxy variables. The outcome revealed that RC and CDC have no significance effect on the ROCE. However, Anselm and Janefrances (2020) expressed divergent views with statistical proof that RC and CDC have positive and significant effects on the performances.

From the perspective of Ayu, Gamayuni and Urbanski (2020), the outcome of the investigation carried out in Indonesia, through the use of primary data and Smart Panel Least Square (PLS), suggests that environmental and social costs significantly and positively affect the financial performances of international energy corporations in Indonesia. Iliemena (2020) investigated the effects of environmental accounting practices on the corporate performance of listed oil and gas companies in Nigeria, covering 2012-2018. Through the use of simple linear regression, findings revealed that environmental accounting has had a positive and significant effect on ROCE.

The study of Chinedu, Udama and Ali (2019) examined the impact of environmental disclosure on the performance of cement companies in Nigeria using environmental health and safety cost as one of the explanatory variables. Data was sourced secondarily from the annual reports of the companies covering 2006-2017. Through the use of a panel regression model, the outcome indicated that environmental health and safety costs had a negative and significant impact on the firms' performance.

Agboola and Oroge (2019) evaluated the effect of environmental cost on the financial performance of two quoted cement companies in Nigeria. Primary and secondary data were employed for the study. The primary data was sourced through the use of questionnaires, while the secondary data was sourced from the annual financial reports and accounts of the companies spanning 2013 to 2018. Regression analysis was adopted for the data analysis. It was found that

environmental costs had significant and positively effects on the financial performance of the cement companies in Nigeria.

It was further revealed from the study of Onuora and Christian (2019) that environmental costs had a negative and insignificant effect on the ROCE of 11 listed oil and gas companies in Nigeria between 2017 and 2018. This was made known with correlation and OLS analytical technique.

Iheduru and Chukwuma (2019) examined the effect of environmental and social costs on the performance of selected manufacturing companies in Nigeria using 2016 annual reports and accounts. Using multiple regression models, it was found that environmental and social costs have a negative and significant relationship with ROCE.

Egbunike and Okoro (2018) investigated whether green accounting, as measured by environmental health safety costs and social costs, affected the profitability of ten non-consumer goods firms listed on NSE during 2012-2016. Data was sourced from the annual reports and accounts of the firm, using environmental health safety cost and social costs as proxies of green accounting. Canonical correlation was used for the analysis, and the result showed that there was no significant relationship between environmental health safety cost and social cost and the profitability measure of the sampled banks.

Otu, Okon and Okafor (2018) examined the relationship between the environmental accounting and oil companies in Nigeria. The secondary data used was extracted from the audited financial statements of the companies, covering 2014-2016. The analytical tool used for the study was multiple linear regressions. The outcome of the study showed that there were positive insignificant relationships between environmental accounting and the performance variable of the companies.

Agbiogwu, Ihendinihu and Okafor (2016) examined the impact of environmental and social costs on the performance of Nigerian manufacturing companies. Data was gleaned from the annual reports and financial summary of 10 randomly sampled firms covering 2014 only. The outcome revealed that environmental and social cost had significantly positive effects on the ROCE of the sampled companies.

Makori and Jagongo (2013) examined the effect of environmental accounting and firms' profitability for 14 randomly selected quoted companies in India. The data gleaned from the secondary source was analysed, using multiple regression models. The outcome of the study suggested that environmental accounting has a significant negative relationship with ROCE. In a study carried out in Niger Delta Region of Nigeria Basse, Effiok and Eton (2013) indicated that environmental cost has significant influence on a firms' profitability.

In view of the theoretical and empirical review, this study advanced a null hypothesis that there is no significant effect of environmental accounting on the financial performance of family-owned companies in Nigeria.

Gap in Literature

Extensive review of previous literature showed a population gap as studies focused mainly on multinationals and conglomerates. Hence, the present study attempted to change the domain focus to family-owned companies in Nigeria, which were rarely considered by previous studies. Furthermore, researchers such as Gamayuni and Urbanski (2020) or Makori and Jagongo (2013) did not consider Nigerian experience and hence, their findings are inapplicable in Nigeria. Also, the studies of Egbunike and Okoro (2018) and Otu, Okon and Okafor (2018) are not up to date, while the studies of Iheduru and Chukwuma (2019), Chinedu, Udama and Ali (2019), Agbiogwu, Ihendinihu and Okafor (2016) did not consider the long run effect of environmental costs on the performances of firms. An attempt was also made to update the environmental literature to 2020 and to consider the long run effects of environmental costs on family-owned companies in Nigeria.

Data and Methods

The research design of this paper was *ex-post facto*, because the study relied on historical data. The population of this study consisted of all 12 listed family-owned companies across industrial and oil & gas sectors in Nigeria, as of 31st March, 2021. The sample of this study focused on the 6 family-owned companies that were listed on the Nigerian Stock Exchange (Conoil Plc, Eterna Plc, Seplat Petroleum Development Company Plc, Honeywell Flour Mills Plc, NOTORE chemical Industries Plc., and Oando Plc), because environmental costs were disclosed in their annual reports. Hence, this sample was purposive. The study made use of secondary data that was sourced from the annual reports, accounts, downloads from NSE and company webs spanning 2012-2020. The study made use of descriptive statistics, correlation and Ordinary Least Squared (OLS) for data analysis with STATA/MP 14.2 econometric software. Furthermore, environmental accounting was proxied by restoration costs, community development costs and employees' health safety costs. The dependent variable was financial performance and surrogated by Return on Capital Employed (ROCE). To reduce the effect of large figures, the study made use of the natural log of some variables. The model is expressed as follows:

$$ROCE_{it} = \beta_0 + \beta_1 \log RC_{it} + \beta_2 \log CDC_{it} + \beta_3 \log HSC_{it} + e_{it}$$

ROCE = Return on Capital Employed

RC = Restoration Cost

CDC = Community Development Cost

HSC = Health & Safety Cost

Table 1: The variable measurement

	Definition	Measurement	Source
ROCE	Dependent Variable	PBIT/Capital Employed	Makori & Jagongo (2013) (adopted)
RC	Independent Variable	Log of total restoration costs	Oshiole, Elamah & Ndubuisi(2020) Adapted measurement
CDC	Independent Variable	Log of total community development cost	Nwaimo (2020)
HSC	Independent Variable	Log of health and safety cost	Oshiole, Elamah & Ndubuisi(2020)

Source: Authors' Compilation (2021)

The A priori expectation of this study was that:

RC < 0.05% and Negative

CDC < 0.05% and Negative

HSC < 0.05% and Positive

Data Analysis and Discussions

Descriptive Analysis

Descriptive analysis was used to encapsulate the summary of the coefficient in the data sets.

Table 2: Descriptive Statistics Results

	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
ROCE	.0116	.57695	-3.76	.63	-6.067	40.00
RC	8636354.469	17851016.19	23548.00	61795000	2.011	2.513
CDC	51541.64	50403.48	1517	173436	.905	-.211
HSC	2691979.816	5865260.78	8543	34424000	3.818	17.826

Source: Authors' computation (2021)

On average, the sampled companies generated 1% on funds employed to finance the operations with a standard deviation of 57%, suggesting existence of dispersion on capital

employed among the companies. Restoration cost, community development cost, and health safety cost, on average, expended N8billion, N0.51billion, and N2billion, respectively, within the period under review. Furthermore, all the independent variables were positively skewed. However, RC and HSC had positive kurtosis and were hence leptokurtic in nature, indicating that the data set is heavily tailed. Furthermore, CDC had a negative kurtosis, indicating a distribution with less extremes from the normal distribution, and thus lightly tailed (Platykurtic).

Correlation Matrix

The correlation test was carried out to determine the relationship among the variables of the study at 5% level of significance.

Table 3: Correlation Results

	ROCE	RC	SC	HSC
ROCE	1.0000			
RC	-0.1294	1.0000		
SC	0.3257		1.0000	
CDC	-0.3818*	0.3316*	0.0096	
HSC	0.0054	0.7814*	0.3160*	100
	0.9704	0.0000	0.0345	

Source: Author's Computation (2021)

Correlation results, as presented in Table 3, show that Restoration Cost (RC) and Community Development Cost (CDC) are weak and negatively correlated with the ROCE of family-owned companies in Nigeria. The implication is that these explanatory variables moved in the opposite direction with Return on Capital Employed (ROCE). However, Health Safety Cost (HSC) has a weak positive correlation with ROCE, indicating that this variable moved in the same direction as ROCE. Further to Table 3, there was no presence of multicollinearity among the independent variables, sequel to the fact that the highest relationship among the variables was 78%, which was lower than the threshold of 80%, as pointed out by Gujarati and Dawan in 2009.

Robustness Test

A regression model was estimated to examine the effects of environmental accounting on the financial performance of family-owned companies in Nigeria. Regression analysis requires constant variance among observations in order to provide a linear unbiased estimate. In this regard, a heteroscedasticity test was performed, and the result indicated that there was a constant variance among the observations. This is because the p-value was 0.1972, which is >5%. A multicollinearity test (Table 4) was also performed to ascertain the degree of correlation among the explanatory variables; the outcome was found satisfactory. This is because Variable Inflation Factor (VIF) is lower than the acceptable threshold of 5 for all the variables. Tolerance value for all explanatory variables is greater than the minimum tolerance value of 0.2. This is arrived at by dividing 1 by vif ($1/5 = 0.2$).

Heteroscedasticity

Chi2 (1) = 1.66
Prob > chi2 = 0.1972

Table 4: Multicollinearity

	VIF	1/VIF
RC	2.49	0.400968
HSC	4.47	0.405521
CDC	1.14	0.880897

Regression Results

Table 5: Pooled Regression Results

Variables	Coefficient	Std. Err.	t-stat	p-value
-----------	-------------	-----------	--------	---------

RC	-0.0168722	0.0158023	-1.07	0.292
CDC	-0.0489452	0.0179705	-2.72	0.009
HSC	0.0261828	0.174636	1.5	0.141
_cons	0.3437353	0.138274	2.49	0.017
R-squared	0.1903			
Adj. R-squared	0.1310			
Prob > F	0.0327			

Source: Authors' computation (2021)

Table 5 represents estimation results, showing the effect of environmental accounting on the financial performance of family-owned companies in Nigeria. The overall R-squared (R^2) of 0.1903 suggests that 19% of the financial performance of family-owned companies in Nigeria is explained by environmental accounting surrogates (restoration cost, community development cost and health safety cost), while other factors account for the 81% variation in financial performance (adjusted $R^2 = 0.13\%$). The p-value (0.0327) indicates that the regression model fits the data at more than the 95% confidence level. This shows that there is a strong effect between environmental accounting and the financial performance of family-owned companies in Nigeria. Based on these findings, the regression model was estimated as follows.

$$ROCE_{it} = .3437353 - .0168722RC_{it} - .0489452CDC_{it} + .0261828HSC_{it} + e_{it}$$

Discussion

The regression results, as depicted in Table 5, show that restoration cost affected financial performance of the sampled population negatively (Coeff. = -.0168722) and was statistically insignificant at 0.05 level. This implies that an increase in the restoration cost will lead to a decrease in financial performance. The outcome of this study was not different from the positions of Nwaimo (2020), Onuora and Christian (2019). Expressing divergent views on this outcome were the studies of Oshiole, Elama and Ndubuisi (2020); Iliemena (2020); Iliemena (2020); Agbiogwu; and Ihendinihu and Okafor (2016), that restoration costs have a positive and significant effect on financial performance. Maintaining another position were the studies of Iheduru and Chukwuma (2019) and Makori and Jagongo (2013), which found a negative and significant effect among the explanatory variables. However, Otu, Okon and Okafor (2018) found a positive and insignificant effect.

Furthermore, community development costs exerted a negative effect (coeff. = -.489452) and significant at 5%, which implied that an increase in CDC tends to reduce financial performance. This calls for great concern, in the sense that the efforts of the companies in promoting community developments through an outflow of funds have not caused a swing in the financial performance of the sampled companies. There is every tendency that these funds may have been released but circumvented from the purpose they were meant to achieve, as a result of corruption. This is not far from the assertion of Emakponuzo and Udih (2015), that high levels of corruption in the society may be responsible for this scenario. Furthermore, it could also be a window-dressing approach by the companies to include this cost in their financial statements without it being released. This will continue to lead to restlessness in the host communities.

The outcome of this study aligned with the work of Iheduru and Chukwuma (2019), while the studies of Oshiole, Elama and Ndubuisi (2020); Ayu, Gamayuni and Urbanski (2020); and Anselm and Janefrances (2020) argued to the contrary, that there is a positive and significant effect between CDC and financial performance. However, Nwaimo (2020) and Onuora and Christian (2019) found that a negative and insignificant effect exists among the explanatory variables.

Health safety cost has a positive and insignificant effect on financial performance. This implies that an increase in HSC will increase the performance of family-owned companies in Nigeria. Extant studies supporting this outcome include Egbunike and Okoro (2018) and Nwaimo (2020). However, Anselm and Janefrances (2020) and Oshiole, Elama and Ndubuisi (2020) were at variance, and posited that a positive and significant relationship exists between the explanatory variables.

Succinct inference from this empirical enquiry was that there is a statistically significant effect of environmental accounting on the financial performance of family-owned companies in Nigeria. Thus, the null hypothesis, which stated that there was no significant effect between environmental accounting and the financial performance of family-owned business, cannot be accepted.

Conclusion and Recommendations

This study therefore concludes that, although environmental accounting has potential to inform improvement in financial performance, only health and safety costs have potential for such improvement. The study therefore recommends as follows:

- a. Payment of health & safety costs should be sustained, as a safe and secure environment enhances the financial performance of family-owned companies in Nigeria.
- b. Stakeholders in the companies should constitute a "Trust Fund Trustees" that will handle community development costs, for fairness and accountability.
- c. Companies should employ youths within the environment in a bid to mitigate incessant restiveness between the companies and the host communities.
- d. Environmental laws should be harmonized to form a formidable one that will be easier to understand.

The study was constrained by a few factors. Firstly, some of the family-owned companies did not disclose environmental costs in their financials and hence, we were unable to analyze more companies in the study. Also, some of the sampled companies did not have their annual reports up to date as at the time of this study, which led to a few omitted variables. In view of this, a repeat of this study is advocated in the future, with empirical attention to the consumer goods sector, with the use of another performance ratio like Net Profit Margin (NPM).

References

- Adediran, S. A., & Alade, S. O. (2013). Impact of environmental accounting on corporate performance in Nigeria. *European Journal of Business and Management*, 5(23), 55-67.
- Afemikhe, S.O. (2003). *The pursuit of value for money*. Ibadan: Spectrum Books Limited.
- Agbiogwu, A. A., Ihendinihu, J. U., & Okafor, M. C. (2016). Impact of environmental and social costs on performance of Nigerian manufacturing companies. *International Journal of Economics and Finance*, 8(9), 173- 179.
- Agboola, O.S., & Oroge, C.A. (2019). Environmental costs and financial performance of cement companies in Nigeria. *International journal of Academic & Applied Research*, 3(18), 60-65.
- Anselm, C., & Janefrances, N. (2020). Environmental costs and financial performance of oil and gas companies in Nigeria. *International Journal of Advanced Academic Research* 6 (10), 23-35.
- Ayu, M.L., Gamayuni, R.R. & Urbaniski, M. (2020). The impact of environmental and social costs of firm performance mediating by earning management. *Polish Journal of Management Studies*, 21(2), 2-13
- Bartholomeusz, M., & Tanewski, G.A. (2006). The relationship between family firms and corporate governance. *Journal of Small Business Management*, 44(2), 245-260.
- Bassey, B.O., Effiok, S.O., & Eton, O.E. (2013). The impact of environmental accounting and reporting on organisation performance of oil and gas in Niger Delta Region of Nigeria. *Research Journal of Finance and Accounting*, 4(3), 1-15.

- Baum, J. A., Calabrese, T., & Silverman, B.S. (2000). Don't do it alone: Alliance network composition and start-ups' performance in Canadian biotechnology. *Strategic Management Journal*, 21(3), 267-294.
- Beaver, W.H. (2006). The information content of annual earnings announcements. *Journal of Accounting Research, Empirical Research in Accounting Selected Studies*: 67-92. 2006.
- Birley, S., & Westhead, P. (2013). Growth and performance contrasts between 'types' of small firms. *Strategic Management Journal*, 11(7), 535-557.
- Che- Ahmad, A., Osazuwa, N.P., & Mgbame, C.O. (2016). Environmental accounting and firm profitability in Nigeria. *Journal of Accounting Research & Audit Practice*, 5(1), 5-14.
- Chinedu, N.G., Udama, U.D., & Ali, O.R. (2019). Impact of environmental accounting disclosure on financial performance in cement companies in Nigeria. *IDOSR Journal of Arts and Humanities*, 4(1), 1-14.
- Chukwuma, R.N. (2015). Influence of environmental costs on the performance of manufacturing companies in Nigeria. Thesis: University of Nigeria.
- Egbunike, A.P., & Okoro, G.E. (2018). Does green accounting matter to the profitability of firms. *Economisk Horisont*, 20(1), 17-26.
- Emeakponuso, D. E., & Udih, M. (2015). Environmental accounting practices by corporate firms in Nigeria. *Advances in Research*, 3(2), 209 -220
- Etale, L.M., Ochuba, I.S., Sawyerr, A.E. (2021). Social cost accounting and profitability of glaxo smithkline Nigeria Plc. *European Journal of Business and Innovation Research*, 9(1), 1-18.
- Farrukh, I. & Faizan, N. (2016). Financial performance of firms; evidence from Pakistan cement industry. *Journal of Teaching and Education*, 5(1), 81-94.
- Federal Environmental Protection Agency 1992, Environmental impact assessment act. Retrieved in June 2006 from www.nigerialaw/federal-environmental-protection-agency.
- Field, B. C., & Field, M. K. (2002). *Environmental economics and introduction*. Third Edition, Boston: McGraw-Hill Irwin.
- Gray, R. H., Owen, D. L., & Adams, C. (1996). *Accounting and accountability: changes and challenges in corporate social and environmental reporting*, London: Prentice Hall.
- Gujarati, D. and Dawan, C. (2015), Porter, McGraw- Hill Education, Washington, DC.
- Hansen, D. R., & Mowen, M. M. (2000). *Cost Management, Accounting and Control*. Edition: South-West College Publishing, a division of Thomson Learning.
- Howes, R. (2002). *Environmental Cost accounting: An introduction and practical guide*. London: The Chartered Institute of Management Accountants.
- Hussain, M.D., Halim, M.S. & Bhuiyan, A.B. (2016). Environmental accounting and sustainable development. *International Journal of business and Technopreneurship*, 6(2), 335-350.
- Iheduru, N. & Chukwuma, I.R. (2019). Effect of environmental and social costs on performance of manufacturing companies in Nigeria. *International Journal of Accounting and Finance Review*, 4(2), 1-7.
- Ijeoma, B. (2015). The Role of Environmental Cost Accounting in Environmental Sustainability in Nigeria, *American Journal of Business, Economics and Management*, 3(6), 395-399.
- Iliemena, R.O. (2020). Environmental accounting practices and corporate performance. *European Journal of Business and Management* 12(22), 2-10.
- Institute of Chartered Accountants of Nigeria study Pack. (2006). *Financial Accounting II*. Lagos: VI Publishing Limited.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Khalid, F.M., Lord, A.P., & Dixon, D.K. (2012). Environmental management accounting implementation in environmentally sensitive industries in Malaysia. Conference paper, Palmerston North, Malaysia.
- Magara, R., Aming, N.N., & Momanyi, E. (2015). Effect of environmental accounting on

- company financial performance. *British Journal of Economics, Management and Trade*, 10(1), 1-11.
- Makori, D.M. & Jagongo, A. (2013). Environmental Accounting and firm performance. *International Journal of Humanities and Social Sciences*, 3(18), 1-18.
- Mensah, H.K., Agyapong, A., & Nuertey, D. (2017). The effect of corporate social responsibility on organizational commitment of employees of rural and community banks in Ghana. *Cogent. Bus. Management*. 4, 1-19.
- Monica, T. (2014). Profitability analysis. *IOSR Journal of Economics and Finance*, 3(2), 1-4.
- Ndifon, O. E., Orok, E. O., & Sackey, J. A. (2014). The development of environmental accounting and disclosure practices of manufacturing companies in Nigeria. *Journal and Sustainable Development*, 5(12), 70-73.
- Norfarah, S. (2017). Board directors' characteristics and earnings management of family owned companies. *International Journal of Accounting and Business Management*, 5(20), 1-15.
- Nwaimo, S.C. (2020). Effect of environmental cost on performances of quoted firms in Sub-Saharan Africa. *European Journal of Accounting, Auditing and Finance Research*, 8(7), 97-120.
- Okeagbe, T.O., & Ofurum, D.I. (2019). Effect of environmental management accounting and financial performance of Nigerian consumer goods. *International Journal of Advanced Academic Research*, 5(1), 1-15.
- Olasupo, S.F., & Akinselure, O.P. (2017). *International Research Journal of Management and Commerce*, 4(11), 337-345.
- Okoye, E. I., & Adeniyi, S. I. (2017). Effect of environmental protection cost on product price in Nigeria. *Arabian Journal of Business and Management Review*, 4(2), 52-56.
- Onuora, J. & Christian, C. (2019). Effect of environmental costs on financial performance of quoted oil and gas companies in Nigeria. *Journal of Accounting and Financial Management*, 5(3), 1-10.
- Oshiole, S., Elamah, A.F., & Ndubuisi, A.N. (2020). Effect of environmental cost disclosure on profitability of oil and gas in Nigeria. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 10(2), 157-165.
- Otu, U.A., Okon, A.M. & Nnanna, O.L. (2018). Oil companies' performance and environmental accounting reporting in Nigeria. *Asian Journal of Economics, Business and Accounting*, 8(1), 1-8.
- Sengottuvel, C. (2018). Environmental accounting and firms' profitability. *International Journal of Innovative Research in Management Studies*, 3(1), 22-27.
- Shanker, M.C., & Astrachan, J.H. (1996). Myths and realities; Family business contribution to US economy. *Family Business Review*, 9(2), 107-115.
- Suleiman, I.L. (2007). The environmental and environmental laws in Nigeria, *Journal of Environmental Watch*, 1, 232-241.