

---

## ENVIRONMENTAL INFORMATION DISCLOSURES AND VALUE OF AGRO-MANUFACTURING FIRMS IN NIGERIA

**IYOKA**, Agbonrha-Oghoye Imas  
Department of Accounting  
Edo State University Uzairue, Nigeria  
iyoka.agbonrha@edouniversity.edu.ng

**IGBINOVIA**, Ikponmwosa Michael  
Department of Accounting,  
Edo State University Uzairue, Nigeria  
igbinovia.ikponmwosa@edouniversity.edu.ng

### ABSTRACT

*This study examined environmental information disclosures and value of agro-manufacturing firms listed on the Nigerian Exchange Group (NXG). The conflicting arguments between free market capitalism and eco-modernist theorists and the paucity of empirical evidence on the place of carbon accounting, environmental consciousness, environmental disclosures, and firm value relying on the submissions of the signaling and legitimacy theories necessitate the study. The study adopted an ex post facto research design. A census of the entire five (5) agricultural firms, twelve (12) industrial goods firms, and three (3) consumer goods firms to make a sample size of twenty (20) firms listed in the NXG from 2014 to 2020 was taken. The panel least squares estimation technique is adopted. The result revealed that effluent and waste, and biodiversity information disclosures exhibit positive significant impact on firm value of Agro-Manufacturing firms in the NXG while cost on environmental activities as well as compliance to environmental laws information disclosures exhibit positive insignificant impact on firm value of Agro-Manufacturing firms in the NXG. The positive relationships are in conformity with signaling theory, i.e., environmental information disclosure signals firm environmental consciousness, and this tends to improve the value of the firm in the long run. The study recommends that a legal framework for environmental reporting in Nigeria be promulgated, as it will serve as a basis for environmental reporting practices and upon which appropriate sanctions will be meted out on defaulting companies.*

**Keywords:** Bio-diversity, carbon accounting, environmental information disclosure, firm value

### INTRODUCTION

The COVID-19 global pandemic and the attendant lockdowns have echoed environmental consciousness among individuals, businesses, and governments across the nations of the world. It has been reiterated that economic security is highly dependent on the wellbeing of people and the planet and therefore should not be compromised for momentary economic fortunes (Igbinovia, 2021). Carbon accounting has attracted the attention of many in recent times in response to calls for environmental conservation amidst technological advancements and rapid industrialization, which has triggered global warming, ozone depletion, and other ecological challenges.

According to the American Accounting Association's (1966) definition, carbon accounting is the process of identifying, measuring, and communicating information about greenhouse gas (GHG) emissions to permit informed judgment and decisions by users of such information. Carbon accounting refers generally to processes undertaken to "measure" the amounts of carbon dioxide equivalents emitted by an entity. It is used inter alia by nations, states, corporations, and individuals to create carbon credit commodity traded on carbon markets and create environmental

---

consciousness among entities in their operating activities (Isваты, 2017). It is the practice of carrying out economic transactions based on environmentalism.

The ultimate aim of carbon accounting is environmental sustainability. Improving the economy is paramount to all countries in sub-Saharan Africa, like other developing and developed countries around the world, as wealth creation is pivotal to improving citizens' wellbeing. At the same time, businesses are not unmindful of the assertions of the Environmental Kuznets Curve Hypothesis in their commitment to providing better returns for investors and other stakeholders. The proponents of the Environmental Kuznets Curve opine that in the long run, there is an inverted U-shaped nexus between economic prosperity and environmental degradation. Because a strong nexus exists between industrialization and economic growth, countries seek ways to achieve economic growth without increasing Green House Gas (GHG) emissions, just as firms are seeking ways to improve their value without harming the environment. The relationship between economic prosperity and environmental sustainability can be likened to a continuum, with nations striving to attain both ends. There is a need to optimally position Nigerian agro-manufacturing firms in the continuum so as not to compromise human and environmental health for wealth, and vice versa.

To achieve sustainable development in highly capitalist economies, adequate regulation and governance at all levels is essential (Meadowcroft et al., 2019). When it comes to addressing climate change, institutions and policies that promote environmentalism, whether as firms or decisions made by millions of people worldwide are all involved. At the same time, reducing global poverty and inequality while reducing risks of climate change is possibly the most urgent priority for global and local policy (Stiglitz, 2019).

The concept of "sustainable development" introduced by the World Commission on Environment and Development (WCED, 1987), and was used to represent development "meets the demands of the present without compromising the future." Advocating for environmental accounting and taxation as a means of encouraging eco-friendly practices and technologies, Okafor and Igbinovia (2017) suggest that fiscal authorities should revisit the bases for arriving at allowable expenses and capital allowances for company income tax and petroleum profit tax by adding environmental friendliness as a prerequisite for allowing an expense or claiming a capital allowance on qualifying capital expenditures for tax purposes. Eco-friendly accounting techniques like activity-based costing (ABC) should be given preference.

In recent times, there have been calls from stakeholders for environmental conservation for sustainable development in Africa. The African Union, for example, has Agenda 2030, which stresses the need for urgent actions to combat climate change and its impacts, preserve terrestrial and marine ecosystems, and halt land degradation and biodiversity loss. Many have opined that free market capitalism engenders depletion of ecosystem and inhibits environmental sustainability, suggesting that democracy and state control of the profligacy of the free market economy are key to engendering environmental sustainability.

Unregulated capitalism has the tendency to increase wealth while causing environmental harm, giving room for externalities that are harmful to the environment. Government regulation becomes imperative to prevent harm when externalities are not internalized (Soyas, 2020; Okafor & Igbinovia, 2017). Eco-modernists, on the other hand, argue that free-market capitalist policies generate entrepreneurial technological change for poverty reduction and environmental quality

improvement. Proponents of this philosophy argue that free market competition allows rapid internalization of environmental costs as customers will demand change, punishing pollution and rewarding environmentally friendly products. These conflicting arguments and the paucity of empirics on the place of carbon accounting, environmental consciousness, environmental disclosures, and firm value relying on the submissions of the signaling and legitimacy theories necessitate the study.

The objective of the study is to examine the impact of environmental information disclosures on value of agro-manufacturing firms in Nigeria. The study covers the period from 2014 to 2020. Firms involved in manufacturing agricultural products like fertilizers, farm implements, and pesticides are considered. The rest of the paper is organized as follows: Part II: literature review; Part III: methodology; Part IV: analyses; and Part V: conclusion and recommendations.

## LITERATURE REVIEW

### Firm Value

The concept of firm value has been explained in several ways. Oyedokun et al. (2019) describe it as the assets owned by a firm as well as the net worth of owners of the firm. Daeli and Endri (2018) viewed it as the present value of a series of cash inflows that an organization will generate in the future. Mohammed (2017) opines that firm value is the investors' perception of the value of the success of the firm in relation to its stock price; while Ateke and Nwulu (2017) states that the value of a firm represent the total worth of firm, encompassing financial value, goodwill and equity. The essence of financial management is to get the most out of available resources to maximize the value for the firm. Well-managed firms usually have improved value, which reflects stakeholders' perception and public image, a low level of information asymmetry, improved profitability, and reduced capital costs, which environmental consciousness guarantees (Sabrin et al., 2016).

The Tobin's Q, also known as the market-to-book value ratio, is one metric used to assess a company's value while taking into account, both internal and external market factors. This ratio, which Professor James Tobin created in 1967, is peculiar because it takes into account numerous aspects of company dynamics. The market-to-book value ratio, or Tobin's Q ratio, is determined by dividing the market price of the company's stock plus debt by the value of its assets (Igbinovia, 2021). Additionally, stock market share price fluctuations can be used to gauge a company's value (Nuguyen & Bui, 2018). This suggests that a rise in share price will inevitably raise the firm's worth. High firm value indicates that the company is wealthy, and as a result, the wealth of the company's owners is utilised. Tobin's Q is used in this study to determine firm value since it considers both internal firm dynamics and external market valuation.

### Carbon Accounting, Environmental Consciousness and Firm Value

Carbon accounting is the process of calculating the amount of carbon released by industrial processes, establishing reduction targets, systems and programs to reduce carbon emissions, and reporting on the progress of the program (Louis et al., 2010). With carbon accounting, companies can know the level of carbons they emit, and then establish strategies to reduce their carbon emission and report to company's stakeholders. Carbon accounting encourage companies to reduce their carbon emission levels (Zvezdov & Stefan, 2015). It guarantees improved environmental disclosures, which, according to the signaling theory, guarantee improved firm value.

Environmentally conscious firms often enjoy reduced capital costs due to reduced information asymmetry and reduced risk that high environmental disclosure engenders. Good products come from good operations, and good operations come from good employees. Employees who work in an ethical and environmentally conscious environment are found to be more likely to speak about it and develop a sense of belonging to the company (Asemah et al., 2013). Improved patronage is also stimulated as environmentally sensitive customers are motivated to prefer products from such firms over those of competitors that are less environmentally friendly. The same is the case for environmentally sensitive investors, who prefer to invest in environmentally sensitive firms, thereby improving market valuation.

### **Empirical Review and Hypotheses Development**

Oyedokun et al. (2019) investigated the relationship between environmental accounting disclosure and firm value of NSE-listed industrial goods firms. A sample of fifteen (15) companies was used during the period 2007–2016, with secondary data sourced from audited annual reports. Using the multiple regression technique, the findings revealed that non-financial indicators of environmental accounting disclosures exhibit a significant positive relationship with firm value. On the other hand, financial indicators of environmental accounting disclosures exhibit insignificant impact on firm value.

Similarly, Emeka-Nwokeyi and Osisoma (2019) investigated effect of sustainability and ethical disclosure components (social, environmental, and governance) on market value of selected non-financial firms in Nigeria for the period 2006–2015. Using content analysis, relevant disclosure data was extracted along with firm market value from annual reports of selected firms. Analyses were done using pool ordinary least square (OLS) regression technique. The results reveal that sustainability disclosure variables have positive significant impact on firm value, except for social sustainability disclosures, which exert inverse and insignificant impact on valuation of firms in selected markets.

Also, Fortune and Khazamula (2018) examined impact of carbon emissions on corporate financial performance of 63 South African companies in 2015. The study used multiple regression estimation technique to assess impact of carbon emissions on companies' financial performance; and found that carbon emissions have negative relationship with companies' performance. The study concludes that companies that try to lower carbon emissions can effectively manage financial performance.

In a related study, Okafor (2018) assessed effect of environmental costs on performance of quoted oil and gas companies in Nigerian from 2006 to 2015. The results indicate that environmental performance positively impacts value of organizations. Moreover, environmental accounting provides organizations with opportunities to reduce environmental and social costs, thereby improving their performance. The study observed that most of the companies investigated do not explicitly publish their environmental costs in their annual reports.

In addition, Ezeagba et al. (2017) investigated relationship between environmental accounting disclosures and return on equity and capital employed by food and beverage companies in Nigeria. Data for the study were collected from secondary sources and analyzed using multiple regression technique. The result showed significant relationship between environmental accounting disclosures and return on equity of selected companies. It also revealed an inverse relationship

between environmental accounting disclosures and selected companies' return on capital employed and net profit margins.

Nnamani et al. (2017) evaluated the effect of sustainability accounting on financial performance of listed manufacturing firms in the Nigerian brewery sector. Data were sourced from financial statements of three sampled firms and analyzed using ordinary linear regression. The study reveals that sustainability reporting has positive significant impact on financial performance of firms. The study argue that firms in Nigeria should invest reasonably in sustainability activities, while specific accounting templates should be articulated by professional accounting regulating bodies to guide firms' reporting on sustainability activities.

In the study of Liu et al. (2016) that investigated how carbon emissions and carbon emission disclosure relates to corporate financial performance, it was found that level of carbon disclosure exhibits positive significant impact on financial performance. The study constructed an index to quantify the quality of corporate carbon emissions disclosure. Using a sample size of sixty-two (62) companies during the period 2010–2012. In other studies, Olayinka and Oluwamayowa (2014) examined corporate environmental disclosure and the market value of quoted companies in Nigeria and reported that inclusion of environmental disclosure enhance market value of firms; while Akinlo and Iredele (2014) examined impact of environmental information disclosure on market value of companies listed on the Nigerian Stock Exchange, using biodiversity, waste management costs, energy policy, environmental pollution, and control policy compliance with environmental laws, as approximate corporate environmental disclosure. The result showed that corporate environmental disclosure in aggregate exhibits a significant positive relationship with market value.

Premised on the foregoing review, the study developed the following hypotheses,

- H<sub>01</sub>:** Social and environmental cost information disclosure has no significant impact on value of agro-manufacturing firms in Nigeria.
- H<sub>02</sub>:** Effluent and waste information disclosure has no significant impact on value of agro-manufacturing firms in Nigeria.
- H<sub>03</sub>:** Biodiversity information disclosure has no significant impact on value of agro-manufacturing firms in Nigeria
- H<sub>04</sub>:** Compliance to environmental laws disclosures has no significant impact on value of agro-manufacturing firms in Nigeria.

## METHODOLOGY

The study adopted an ex post facto research design. A census of entire five (5) agricultural firms, twelve (12) industrial goods firms, and three (3) consumer goods firms to make a sample size of twenty (20) firms listed in the NGX from 2014 to 2020 was taken. Secondary data sourced from the annual reports were analyzed using the panel estimation technique due to the heterogeneity problem in a cross-section study. The fixed effect model (FEM) and random effect model (REM) were conducted. The choice between the FEM and REM is based on the Hausman test probability statistic. If the Hausman test probability statistic is significant, the FEM is preferred, and vice versa.

The variables under investigation were measured thus: firm value = sum of equity and total debt scaled by total assets (Lindenberg & Ross, 1981). Environmental and social cost information disclosure = cost expended on corporate social responsibility and environmental issues (Oyedokun et al., 2019). Effluent and waste management disclosure = content analysis using GRI-G4 guidelines (Julansa et al., 2020). Material recycling and conservation of resources (biodiversity) disclosures = content analysis GRI-G4 guidelines (Julansa et al., 2020). Compliance with environmental laws= content analysis using GRI-G4 guidelines (Julansa et al., 2020); while leverage = total debt to total asset (Ullah & Kamal, 2017).

### Theoretical Framework and Model Specification

The model is anchored on the signaling and legitimacy theories as propounded by Spence (1973), Dowling, and Pfeffer (1975), respectively. Due to the separation of ownership from control, owners lack adequate information about the roles of agents in maximizing their wealth. Rynes et al. (1991) opined that the signaling environment, either within an organization or between organizations, affects the extent to which signaling reduces information asymmetry. One way that signaling can reduce information asymmetry is through disclosure practices. A firm that discloses its environmental activities implies environmental sustainability, which tends to improve the value of the company.

Therefore, the disclosure of environmental activities is expected to positively influence a company's value. Legitimacy theory emphasizes that an organization has to carry out its actions and operations in a manner that conforms to acceptable norms and social values in order to be seen as legitimate. Deegan (2000) opined that an organization is said to be legitimate when it discloses its activities as they affect the environment in which it operates. Legitimacy theory assumes that there is a correlation between the business organization and the community in which it operates. Similarly, Cho and Patten (2007) reported that legitimacy theory explains why environmental information disclosure is necessary for the societal pressure the organization is facing regarding its environmental performance. Therefore, the disclosure of environmental activities is expected to positively influence a company's output, or in this case, its market value.

In line with signaling and legitimacy theories, the model is specified in its functional form as:

$$FV=f(CD, EWD, MBD, CELD, LEV) \text{ -----(i)}$$

Where: FV= Firm value; CD= cost expended on corporate social responsibility and environmental activities; MBD= Material recycling and conservation of resources (Biodiversity) disclosures; CELD= Compliance with environmental laws; and LEV= Leverage. Specifying the functional model into an econometric in random effect (REM) form, we have;

$$FV_{it}=\beta_1+\beta_2CD_{it}+\beta_3EWD_{it}+\beta_4MBD_{it}+\beta_5CELD_{it}+\beta_6LEV_{it}+w_{it} \text{ -----(ii)}$$

Where:  $\beta_1$  = a common mean value intercept for the twenty (20) listed companies;  $\beta_2$ -  $\beta_6$  = Unknown coefficients; i= Companies (1...20 companies); t= Time [(1...7 years),  $w_{it}$ = combination of cross-section, or individual-specific error term ( $\epsilon_i$ ) and  $\mu_{it}$ .

**Apriori expectation:**  $\beta_2$ - $\beta_6 > 0$

---

**DATA ANALYSES AND INTERPRETATION**


---

**Table 1: Descriptive Statistics**

	Mean	Median	Maximum	Minimum	Std. dev.	Jarque-bera	Prob	Obs
TOBINSQ	1.815	1.268	9.137	0.502	1.536	429.304	0.000	140
CD	163645.5	2354.500	2852000	0.000	464218.3	2003.075	0.000	140
EWD	0.405	0.333	0.850	0.000	0.215	8.815	0.012	140
MBD	0.412	0.430	0.862	0.000	0.260	13.007	0.001	140
CELD	0.296	0.237	0.667	0.000	0.187	14.504	0.001	140
LEV	0.546	0.530	2.230	0.032	0.315	455.721	0.000	140

Source: Researchers' compilation (2023)

Table 1 shows the descriptive statistics of the study. As observed, TOBIN' S Q showed a mean value of 1.815, which implies that the ratio of the sum of equity and debt to total assets is about 1.8%. The standard deviation of 1.536 is quite low, and it shows a considerable level of clustering around the mean value. The mean value of CD, which is a measure for financial indicators of environmental information disclosure, is 163645.5, which suggests that the average cost expended by the sampled companies is about ₦163,645.5 with a standard deviation of 464218.3, which is large and suggests a wide level of variability from the mean value.

The mean value for EWD, which is a measure for effluents and waste management disclosures, is 0.405, which suggests that the extent of its disclosure is about 40.5%, with a standard deviation of 0.215, which shows a considerable level of clustering around the mean value. The mean value of MBD, which is a measure for material recycling and conservation of resources (biodiversity) disclosures, is 0.412, which suggests that the extent of its disclosure is about 41.2%, with a standard deviation of 0.260, which shows a considerable clustering around the mean value. The mean value for CELD, which is a measure of compliance with environmental laws and emissions disclosures, is 0.296, which suggests that the extent of its disclosure is 29.6%, with a standard deviation of 0.187, which shows a considerable level of clustering around the mean value.

Finally, the mean value of LEV, which is a measure of financial leverage, is 0.546, which suggests that the ratio of total debt to assets of the sampled firm is about 54.6% with a standard deviation value of 0.315, which shows a considerable level of clustering around the mean value. Jarque-Bera probability values were all significant ( $p = 0.000$ ) at 1%, which indicates the presence of outliers in the distribution is not unlikely.

**Table 2: Pearson Correlation Result**

	TOBINSQ	CD	EWD	MBD	CELD	LEV
TOBINSQ	1					
CD	0.020 [0.813]	1				
EWD	0.244* [0.004]	-0.138 [0.104]	1			
MBD	-0.096 [0.259]	0.197* [0.020]	-0.023 [0.784]	1		
CELD	-0.048 [0.574]	0.202* [0.017]	-0.114 [0.178]	0.060 [0.484]	1	
LEV	0.455* [0.000]	-0.083 [0.327]	-0.062 [0.464]	-0.115 [0.177]	-0.045 [0.596]	1

Source: Researchers' compilation (2023)

Table 2 presents the correlation results among the variables. However, of interest to the study is the correlation between the explanatory variables (financial indicators of environmental information disclosure, effluents and waste management disclosures, material recycling and conservation of resources (biodiversity) disclosures, and compliance with environmental laws and emissions disclosures) and the dependent variable (firm value). It can be observed that TOBINSQ positively correlates with CD ( $r = 0.020$ ), EWD ( $r = 0.244$ ), and LEV ( $r = 0.455$ ), while negatively correlating with MBD ( $r = 0.096$ ) and CELD ( $r = 0.048$ ). It can be observed that the TOBINSQ correlation with EWD and LEV is significant at the 1% level of significance.

The positive relationship implies a proportionate increase between the dependent and independent, and vice versa. The correlation among the explanatory variables shows that CD had a significant positive relationship with both MBD and CELD. It can also be observed that there is no evidence of high correlation among the explanatory variables. In the results, none of the variables correlate between themselves above a threshold of 0.90, which is an indication that the issue of multicollinearity is likely absent among the distributions since Hair et al. (2010) posit that the multicollinearity problem is likely present when the correlation coefficient is above 0.90. However, correlations do not necessarily imply functional dependence or causality in a strict sense. Therefore, regression analysis is more suitable for that purpose.

**Table 3: Results of the VIF Test**

Variable	Coefficient	Centered VIF
C	0.183	NA
CD	6.35E	1.101
EWD	0.278	1.034
MBD	0.193	1.051
CELD	0.374	1.053
LEV	0.128	1.024

Source: Researchers' compilation (2023)

Table 3 shows the test for multicollinearity. It can be observed that all the centered VIF values for all the explanatory variables were below the benchmark value of 10. The decision rule of the VIF tests is that if any of the explanatory variables exhibits VIF up to a value of ten (10), then it correlates with another independent variable, but if otherwise (i.e. when  $< 10$ ), then the issue



multicollinearity among the series is likely absent. Going by the above decision rule, it can be concluded that there are no issues with unstable parameter estimates in the regression lines.

**Table 4: Panel Regression Estimation**

<i>Variable</i>	Apriori Sign	Random Effect	Fixed Effect
C		-0.132 (-0.289) {0.773}	-0.259 (-0.637) {0.526}
CD	+	2.010 (0.103) {0.918}	7.030 (0.323) {0.748}
<i>EWD</i>	+	0.907** (2.030) {0.044}	0.740 (1.577) {0.118}
<i>MBD</i>	+	1.182** (2.234) {0.027}	1.678** (2.776) {0.007}
<i>CELD</i>	+	0.569 (1.336) {0.183}	0.540 (1.226) {0.223}
<i>LEV</i>	+	1.691*** (5.402) {0.000}	1.674*** (5.049) {0.000}
<i>Model Parameters</i>			
R Square		0.217	0.835
Adj. R Square		0.188	0.789
F Statistic		7.420 (0.000)	18.376 (0.000)
Durbin-Watson Stat.		0.72	0.83
<b>Hausman Stat.</b> 6.890 (0.229).			

Source: Researchers' compilation (2023): T-Statistic ( ); p-value { }; \*\*\*, \*\* & \* sig @ 1%, 5% and 10% respectively;

Table 4 above shows the regression results examining the impact of environmental information disclosure on the firm value of agro-manufacturing firms listed in the NSE. The Hausman test statistic with a Chi-square value of  $\chi^2 = 6.890$  and a p-value of 0.229 indicates that the random effect estimation (RE) is the preferred model to the fixed effects, indicating the presence of correlations between the errors and the explanatory variables, which is the key assumption in a cross-sectional study, is insignificant enough to undermine the estimated results. Hence the RE estimation results are reported for the analysis in the study. The  $R^2$  of 0.217 suggests that the explanatory power of environmental disclosure information over systematic variations in firm value is 21.7% with an adjusted value of 18.8%. The F-stat of 7.420 is significant (p-value = 0.000) at 1%, which suggests that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected. It is also indicative of the joint statistical significance of the model. The Durbin Watson value of 0.72 suggests that the presence of serial correlation in the residuals is not unlikely; however, this does not give much cause for concern.

### Test of Hypotheses

**H<sub>01</sub>:** *Social and environmental cost information disclosure has no significant impact on value of agro-manufacturing firms in Nigeria.*

The first hypothesis states that *social and environmental cost information disclosure has no significant impact on value of agro-manufacturing firms in Nigeria.* The results show that social and environmental cost information disclosure exhibits a positive but insignificant impact ( $p = 0.918$ ) on agro-manufacturing firm value at the 1%, 5%, and 10% levels. Based on the statistically insignificant criterion ( $p = 0.918 > 0.01; 0.05; 0.1$ ), we accept the null hypothesis. The positive coefficient sign suggests that an increase in social and environmental cost information disclosure by a unit leads to a 2.010-unit rise in value of agro-manufacturing firms in Nigeria.

**H<sub>02</sub>:** *Effluent and waste information disclosure has no significant impact on value of agro-manufacturing firms in Nigeria.*

The second hypothesis states that *disclosure of effluent and waste information has no significant impact on value of agro-manufacturing firms in Nigeria.* The findings indicate that disclosing effluent and waste information has a significant positive impact ( $p = 0.044$ ) on value of agro-manufacturing firms at the 5% and 10% levels. Based on the statistically significant criterion ( $p = 0.044 < 0.05; 0.1$ ), we reject the null hypothesis. The positive coefficient sign suggests that an increase in effluent and waste information disclosure by a unit leads to a 0.907-unit rise in the value of agro-manufacturing firms in Nigeria.

**H<sub>03</sub>:** *Biodiversity information disclosure has no significant impact on value of agro-manufacturing firms in Nigeria*

According to the third hypothesis, biodiversity information disclosures has no significant impact on value of Nigerian agro-manufacturing firms. The results show that biodiversity disclosure exhibits a significant positive impact ( $p = 0.027$ ) on value of agro-manufacturing firms at 5% and 10% levels. Based on the statistically significant criterion ( $p = 0.027 < 0.05; 0.1$ ), we reject the null hypothesis. The positive coefficient sign suggests that an increase in biodiversity information disclosure by one unit leads to a 1.18 unit rise in the value of agro-manufacturing firms in Nigeria.

**H<sub>04</sub>:** *Compliance to environmental laws disclosures has no significant impact on value of agro-manufacturing firms in Nigeria.*

The fourth hypothesis states that *compliance with environmental laws and disclosures have no significant impact on value of agro-manufacturing firms in Nigeria.* The results show that compliance with environmental laws exhibits a positive but insignificant impact ( $p = 0.0183$ ) on value of agro-manufacturing firms at 1%, 5%, and 10% levels. Based on the statistically insignificant criterion ( $p = 0.183 > 0.01; 0.05; 0.1$ ), we accept the null hypothesis. The positive coefficient sign suggests that an increase in compliance with environmental laws by one unit leads to a 0.569-unit rise in the value of agro-manufacturing firms in Nigeria.

### DISCUSSION OF FINDINGS

The positive coefficient signs in all the explanatory variables are in tandem with the signaling and legitimacy theories. When agro-manufacturing companies disclose information on environmental activities, it signals their environmental consciousness. Environmentally conscious firms experience low cost of capital because information asymmetry is reduced. According to Asemah et al. (2013), employees who work in ethical and environmentally conscious firms are more likely

to speak about it and develop a sense of belonging to the company. Also, investors who are environmentally sensitive will prefer to invest in environmentally sensitive firms, thereby improving market valuation.

According to Oti and Mbu-Ogar (2018), when organizations provide infrastructure to the communities in which they operate, it helps to promote the organization's reputation and corporate image, as well as gain a competitive advantage, which in turn increases their value. The positive coefficients revealed by this study corroborate earlier studies by Emeka-Nwokeyi and Osisima (2019), Okafor (2018), Nnamani et al. (2017), Liu et al. (2016), Olayinka and Oluwamayowa (2014), and Akinlo and Iredele (2014). It is worthwhile to know that there is a rising concern for disclosing environmental information from both the perspective of financial and non-financial indicators in order to offer a better understanding of an organization's sustainability efforts (Atkins & Maroun, 2015).

### CONCLUSION

The study concludes that environmental information disclosures improve the market value of firms, and this is in conformity with theoretical expectations. However, the low joint impact of 21.7% that environmental information disclosure practices had on firm value suggests that other variables such as firm attributes, corporate governance, etc. could account for firm value. A legal framework on environmental reporting should be promulgated to serve as a basis for environmental reporting practices, and upon which appropriate sanctions are meted out to defaulting companies.

### REFERENCES

- Akinlo, O. O., & Iredele, O. O. (2014). Corporate environmental disclosures and market value of quoted companies in Nigeria. *The Business & Management Review*, 5(3), 1-12.
- Asemah, E. S., Okpanachi, R. A., & Edegoh, L. O. (2013). Business advantages of corporate social responsibility practice: A critical review. *New Media and Mass Communication*, 18 (1), 45-54.
- Ateke, B. W., & Nwulu, C. S. (2017). Brand value and marketing wellness of deposit money banks. *European Journal of Management and Marketing Studies*, 2(2), 87-102.
- Atkins, J., & Maroun, W. (2015). Integrated reporting in South Africa in 2012: Perspectives from South African institutional investors. *Mediterranean Accountancy Research*, 23(2), 197-221.
- Charles, E. Z., John, A. C. R. & Umeoduagu, C. (2017). Environmental accounting disclosures and financial performance: A study of selected food and beverage companies in Nigeria. *International Journal of Academic Research in Business and Social Sciences*, 2(1), 1-16.
- Cho, C., & Patten, D. (2007). The role of environmental disclosure as legitimacy tools: A research note. *Accounting organizations and society*, 32(7), 639-647

- Daeli, C., & Endri. (2018). Determinants of firm value: A case study of cigarette companies listed on the Indonesia Stock Exchange. *International Journal of Managerial Studies and Research*, 6(8), 51-59.
- Deegan, C. (2000). *Financial accounting theory*. MC Graw Hill Book Company.
- Dowling, J., & Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behaviour. *Pacific Sociological Review*, 18(1), 122-136.
- Emeka-Nwokeji, N. A., & Osisioma, B. C. (2019). Sustainability disclosures and market value of firms in emerging economy: Evidence from Nigeria. *European Journal of Accounting, Auditing and Finance Research*, 7(3), 1-19.
- Ezeagba, C. E., John-Akamelu, C. R., & Umeoduag, C. (2017). Environmental accounting disclosures and financial performance: A study of selected food and beverage companies in Nigeria. *International Journal of Academic Research in Business and Social Sciences* 7 (9), 162 -173.
- Fortune, G., & Khazamula, S., (2018). The impact of carbon emissions on corporate financial performance: Evidence from the South African firms. *Sustainability*, 10(7), 2398.
- Hair, J., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis (7<sup>th</sup> edition)*. Pearson Education International.
- Igbinovia, M. I. (2021). Mediators of social and environmental disclosures on firm value in Nigerian consumer goods firms. *Unpublished Dissertation*. Nnamdi Azikiwe University Awka.
- Iswaty, S. (2017). *Carbon accounting reflection as a response to face the climate change advances in Social Science, Education and Humanities Research*. 1<sup>st</sup> International Conference Postgraduate School Universitas Airlangga: Implementation of Climate Change Agreement to Meet Sustainable Development Goals (ICPSUAS 2017).
- Julansa, H., Zuraida, Z., & Diantimala, Y. (2020). The effect of gas emission disclosure, solidwaste disclosure and effluent disclosure on firm value. *International Journal of Academic Research in Business and Social Sciences*, 10(6), 449–475.
- Lindenberg, E., & Ross, S. (1981). Tobin's Q ratio and industrial organization. *Journal of Business*, 54(5), 14-16.
- Louis, S., Raditya, I., Sofian, D, (2010). Peran Carbon Accounting dalam Implementasi Corporate Social Responsibility untuk Mengurangi Polusi Industri, Makalah disampaikan pada Pekan Ilmiah Mahasiswa Nasional (PIMNAS) ke-XXIII, Bali. DOI: 10.2991/icpsuas-17.2018.4
- Liu, Y., Zhou, X., Yang, J., & Hoepner, A., (2016). Corporate carbon emission and financial performance: Does carbon disclosure mediate the relationship in the UK? *ICMA discussion paper*, 2016.
- Meadowcroft, J., David, B., Erling, H., Oluf, L., Kristin, L., & Geoffrey G. (Eds.) (2019). *What next for sustainable development? Our common future at thirty*. Cheltenham: Edward Elgar.
- Mohammed, G. T. (2017). Impact of firm characteristics on firm value of listed healthcare firms in Nigeria. *Unpublished Thesis*. Ahmadu Bello University Zaria.
- Neungvanna, U., Pongsupat, T., Sincharoonsak, T.; Bosakoranut, S., Shoosanuk, C. A., & Chuaychoo, M. (2019). Corporate social responsibility reporting affecting the cost of capital: Empirical evidence of listed companies in the Stock Exchange of Thailand. *Asian Administration and Management Review*, 2(2), 298-310.
- Nguyen, T. L. H., & Bui, T. M. (2018). Determinants of firm value in Vietnam: A research framework. *International Journal of Science and Research*, 9(1), 626-631.

- Okafor, G. O., & Igbinoia, M.I. (2017). Taxation: A tool for environmental conservation. *International Journal of Economics, Commerce and Management*, 5 (11), 68-81.
- Okafor, T.G. (2018). Environmental costs accounting and reporting on firm financial performance: A survey of quoted Nigerian oil companies, *International Journal of Finance and Accounting*, 7(1), 1-6.
- Olayinka, A. O., & Oluwamayowa, I. O. (2014). Corporate environmental disclosures and market value of quoted companies in Nigeria. *The Business & Management Review*, 5(3), 171- 183.
- Oti, P. A., & Mbu-Ogar, G. B. (2018). Analysis of environmental performance of selected quoted oil and gas companies in Nigeria. *Journal of Accounting and Financial Management* 4(2), 1-12.
- Oyedokun, G. E., Egberioyemi, E., & Tonademukaila, A. (2019). Environmental accounting disclosure and firm value of industrial goods companies in Nigeria. *IOSR Journal of Economics and Finance*, 10(1), 7-17.
- Rynes, S. L., Bretz, R. D., & Gerhart, B. (1991). The importance of recruitment in job choice: A different way of looking. *Personnel Psychology*, 44, 487-521.
- Sabrin, A., Sarita, B., Takdir, D. & Sujono, S. (2016). The effect of profitability on firm value in manufacturing company at Indonesia Stock Exchange. *The International Journal of Engineering and Science*, 5(10), 81-89.
- Soysa, I. D. (2020). Does free-market capitalism constrain environmental sustainability and boost atmospheric pollution? An empirical test, 1990–2017. Retrieved from <https://www.researchgate.net/publication/340550196>
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87, 355-374.
- Stiglitz, J. E. (2019). *People, power, and profits: Progressive capitalism for an age of discontent*. W. W. Norton & Co.
- Ullah, S., & Kamal, Y. (2017). Board characteristics, political connections, and corporate cash holdings: The role of firm size and political regime. *Business & Economic Review*, 9(1), 157-180.
- World Commission on Environment and Development (1987). *Our Common Future*. Oxford University Press.
- Zvezdov, D., & Stefan, S. (2015). *Decision support through carbon management accounting: A framework based literature review*. Springer International Publishing.