Effect of Carbon Emission Disclosure on Economic Value Added of Oil and Gas Firms.

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Abstract: *This study analyzed the effect of carbon emission disclosure on economic value added of oil and gas firm in Nigeria stock exchange between the periods 0f 2018-2019. Panel Least Squared (PLS) method of data analysis was used. Secondary sources of data were employed; the interested variables were sourced from the annual report of the quoted oil and gas firms. The following variables were employed: Economic value added, Emission carbon disclosure, Revenue growth of firm and Firm size. The study employs Causality Test, Hausman Test. fixed effect as well as random effect to analyses the included variables. From the analysis result the study found that emission carbon disclosure has significant effect on economic value added, revenue growth of firm has positive significant effect on economic value added. Firm size has positive insignificant negative effect on economic value added. The study recommend that customers to use environmentally friendly products which improves firms' revenue and further increases firms' profitability.*

Keywords: *Carbon emission disclosure, Economic value added**, Revenue growth, Firm size*

INTRODUCTION

The control of Carbon emissions is a fundamental aspect of sustainable development. All managers and corporate personnel are obliged to develop organizational structures for the control of emissions, assessment of the risks associated with Carbon emissions and the evaluation of carbon control mechanisms developed to address the issue Okudo & Amahalu (2019). According to a report issued by the Carbon Disclosure Project (CDP, 2021) corporate carbon reporting has increased around the world over the last few years. This is mainly due to the fact that climate change issues have become increasingly fundamental to a wide range of stakeholders in the corporate sector, which has shifted attention to the effects of Carbon emissions, mainly carbon, on corporate activities. This is a trend evidenced by the increase in the number of socially responsible investments by firms all over the world.

The Carbon Disclosure Project (CDP) reports encourage the firms to develop web-based forms of corporate accountability with regard to carbon activities. Among the major problems of the 21st century is the emission of Carbon and the overdependence on carbon-based energy sources. Scientific researchers continue to present mounting evidence of the effects of Carbon emissions on climate change. Companies have always been central to the efforts to face these two problems owing to the large quantity Supplementary in formation of material that they process leading to the release of carbon disclosure as a by-product and their capabilities for technological innovation. This importance is reflected in the emerging literature in the fields of corporate and public policy which requires companies and organizations to respond and adapt to climate change. The control of carbon emissions is a fundamental aspect of sustainable development. All managers and corporate personnel are obliged to develop organizational structures for the control of emissions, assessment of the risks associated with Carbon emissions and the evaluation of carbon control mechanisms developed to address the issue. Disclosure of carbon emissions is an issue emerging in various countries related to the impact of climate change on the survival of the organization is no exception in Indonesia. In Indonesia, the disclosure of carbon emissions is a kind of voluntary disclosure where not many organizations or business entities in Indonesia that reveal this type of information. Information disclosure of carbon emissions is one of the important information for stakeholders, especially for investors who are more interested in companies that disclose information about their environment that are useful as consideration for investment decisions. Diah & SE. (2016)

Statement of the Problem
The phenomenon of global warming caused by uncontrolled accumulation of greenhouse gas (GHG) emissions into the atmosphere has a potentially damaging and irreversible impact. An international body for climate change assessment, Intergovernmental Panel on Climate Change (2014), concluded that human activity is a major cause of increasing global average temperatures and immediate action to reduce global warming into tolerable limit is needed, but this goal will only be achieved by significantly reducing GHG emissions. It also cannot be denied that the increase in global average temperature has been started since the industrial revolution in 1750

Kurnia, Darlis, & Putra, (2020). examined the effect of carbon emission disclosure on firm value, The result shows carbon emission disclosure and good corporate governance have no direct effect on firm value. Benedikt, Jürgen Stefan .Sebastian & Aleksandar .(2021). examined the impact of a disclosure mandate for greenhouse gas emissions on firms 'subsequent emission levels and financial operating performance. our findings indicate that the reporting mandate had a real effect on the variable to be disclosed without adversely affecting the financial operating performance of the treated firms.Diah, SE., & Efita (2016). The results of the study, showed that the disclosure of carbon emissions correlated negatively and significantly influence the value of the company. Then, the disclosure of corporate social responsibility correlates positively and significantly influence the value of the company.Hardiyansaha, & Agustinib, (2021) examine the role of environmental performance in the relation between carbon emissions disclosure and firm value. The results indicate the carbon emissions disclosure has a positive and significant effect on firm value. Gabrielle & Arianto (2019). aimed to investigated the effect of greenhouse gas emissions disclosure and environmental performance on firm value. The results of this research found that greenhouse gas emissions disclosure and environmental performance have a

positive effect on firm value. Mohammad & Aisa .(2020) aims of this study is to analyze the effect of carbon emissions disclosure on firm value and industry type as moderating variables. The first analysis shows that carbon emissions disclosure has a positive and significant effect on firm value. In the light of the foregoing, it is obvious that there are inconsistencies in the findings of prior studies. Therefore, this study used Nigeria data and setting to determine if our findings will negate or support the prior belief in this area.

REVIEW OF RELATED LITERATURE

2.1 Conceptual Review

2.1.1 Carbon Emissions Disclosure

Disclosure is a word newly prevalent in the climate change discourse. It means companies measuring and reporting information about their environmental performance and impacts so that investors can better understand its relevance to the future of the business. In the face of unparalleled global challenges – climate change, water scarcity and deforestation – disclosure is a vital first step in managing and reducing environmental impact (Simpson, 2017; Egolum, Amahalu & Obi, 2019). A carbon disclosure rating is a measure of the environmental sustainability of a company, based on voluntary disclosures by the company itself. The practice is intended to help investors who wish to incorporate environmental, social, and governmental (ESG) factors into their investment decision-making process Carbon Emissions. Carbon emissions are carbon release to the atmosphere. Carbon emissions associated greenhouse gas emissions, the main contributor to climate change (ecolife.com). CO_2 emissions from time to time continue to increase both at the global, regional, national to a state or local to an area. This happens because of the growing use of energy from organic materials (fossil), land use change and forest fires, as well as the increase in anthropogenic (Slamet S (Researcher Lapan), 2002 in Jannah, 2014). One contributor to the carbon footprint is the operational activities of the company. Companies in the face of climate change are expected to disclose their activities that contribute to the improvement of climate change one of them with carbon emission disclosure Diah, SE. & Efita (2016)

2.2 Theoretical Review

2.2.1 Legitimacy Theory

The earliest documentation on legitimacy theory can be traced to the study of Sethi (1975) who states that corporate social responsibility is that corporate behaviour that aligns with prevailing social norms, values and expectations. The concept of social contract holds that the activities of business organizations should comply with social expectations. In the absence of this compliance society will withdraw the organizations' right to continue its operations. Business organizations operate within the boundary set by rules, regulations and societal norms. Where there is any perceived threat to the business as a result of violation of any rule and societal norm, sustainability disclosures are released by the companies. This implies that businesses that are prone to legitimacy problems tend to disclose more information in order to satisfy the public about their sustainability performance (Scaltrito, 2015). Legitimacy theory posits that business

organizations disclose their sustainability initiatives to legitimize their operations. The businesses that are prone to sustainability issues also report more information to minimize criticism from the host community, address stakeholder expectations, build reputation and ultimately attract capital. Sethi (1975) also indicates that the need for corporate social responsibility is linked to organizational quest for legitimacy in the presence or absence of legitimacy threats. Scaltrito (2015) on legitimacy theory identify a number of threats to legitimacy namely negative events and media exposure. According to Raucci and Tarquinio (2015)., business organizations seek 'legitimacy' from important stakeholders by ensuring that their value system is in alignment with the values of the society that hosts the operations of the business. Sethi (1975) also discloses that legitimization is characterized by changes in the internal decision-making, changes in the perception of the external environment, and accountability mechanisms of the business organization. With respect to the notion of legitimacy, corporate disclosures (mandatory/voluntary) are ways through which businesses can show that they support certain societal expectations.

2.3 Empirical Studies

Kurnia, Darlis, & Putra, (2020). examined the effect of carbon emission disclosure on firm value, (2) the effect of good corporate governance on firm value, (3) the mediating role of financial performance between carbon emission disclosure and firm value, and (4) the mediating role of financial performance between good corporate governance and firm value. The research sample includes 43 mining, agro, and manufacturing firms listed in the Indonesian Stock Exchange over the 2015-2017 period. Carbon emission disclosure is measured by an indicator of the Global Reporting Initiative Series of Environmental Aspect. Good corporate governance is measured by the corporate governance score of shareholder rights, boards of directors, outside directors, audit committee and internal auditor, and disclosure to investors. Financial performance is measured by return on assets, while firm value is measured by Tobin's Q. Data analysis uses the structural equation modeling. The result shows carbon emission disclosure and good corporate governance have no direct effect on firm value. On the other hand, financial performance mediates the effect of carbon emission disclosure and good corporate governance on firm value. It shows that higher carbon emission disclosure and good corporate governance are meaningless for the investor if they do not give any financial performance improvement.

Benedikt, Jürgen Stefan .Sebastian & Aleksandar .(2021). examined the impact of a disclosure mandate for greenhouse gas emissions on firms 'subsequent emission levels and financial operating performance. For UK-incorporated listed firms a carbon disclosure mandate was adopted in 2013. Our difference-in-differences design shows that firms affected by the mandate reduced their emissions by about 8% relative to a control group of European firms. At the same time, our tests indicate that the treated firms experienced no significant changes in their gross margins.Taken together, our findings indicate that the reporting mandate had a real effect on the variable to be disclosed without adversely affecting the financial operating performance of the treated firms.

Diah, SE., & Efita (2016). Investigate how the influence of carbon emission disclosure on the firm value with environmental performance as control variables and the effcet of corporate social responsibility to the firm value with profitability, leverage and board of commissioner as control variables. The study population consisted of all manufacturing companies listed in Indonesia Stock Exchange from 2010 to 2013. By using purposive sampling method, the number of samples were obtained as many as 48, which is derived from 12 companies for 4 years. The data consisted of annual reports and corporate sustainability report. The results of the study, showed that the disclosure of carbon emissions correlated negatively and significantly influence the value of the company. Then, the disclosure of corporate social responsibility correlates positively and significantly influence the value of the company.

Hardiyansaha, & Agustinib, (2021) examine the role of environmental performance in the relation between carbon emissions disclosure and firm value. A measurement tool using content analysis method to measure carbon emissions disclosure that adopts a checklist from the Carbon Disclosure Project (CDP). Firm value is proxies with Tobin's Q, while environmental performance is assessed based on the results of the environmental management performance appraisal program (PROPER). Sample of this study using 34 companies that listed on the Indonesian Sharia Stock Index (ISSI) from 2014 to 2019. Moderated regression analysis (MRA) is used to test the hypothesis. The results indicate the carbon emissions disclosure has a positive and significant effect on firm value. This research also found that there is an evidence that environmental performance can strengthen the relation of carbon emissions disclosure to firm value, due to the company's efforts by participating in the PROPER program is a form of corporate responsibility in an effort to reduce the impact of environmental damage arising from the company's operational activities which have been responded positively by investors.

Gabrielle & Arianto (2019). aimed to investigated the effect of greenhouse gas emissions disclosure and environmental performance on firm value. The samples were companies participating in the Performance Rating Assessment Programme on Environment Management (PROPER/Program Penilaian Peringkat KinerjaPerusahaan) of the Ministry of Environment Republic of Indonesia that are listed in the Indonesia Stock Exchange (BEI) 2014-2017 period. The data usedwere secondary data from annual reports and/or sustainability reports. This study uses moderated regression analysis with panel data processed by using EViews. The results of this research found that greenhouse gas emissions disclosure and environmental performance have a positive effect on firm value. Environmental performance can moderate the relationship between greenhousegas emissions disclosure and firm value. Debt to equity ratio and net operating income as control variables have a positive effect on firm value, but firm size has a negative effect on firm value.

Mohammad & Aisa .(2020) aims of this study is to analyze the effect of carbon emissions disclosure on firm value and industry type as moderating variables. Carbon emissions disclosure is measured using the content analysis method adopted from a questionnaire issued by the CDP (Carbon Disclosure Project). Firm value is measured by Tobin's Q, while industry types are assessed based on company classifications namely high profile industry and low profile industry. This study uses multiple linear regression analysis, and uses 43 companies listed on the Indonesia Stock Exchange and follows the 2014-2018 company's performance rating assessment

program in environmental management (PROPER). The first analysis shows that carbon emissions disclosure has a positive and significant effect on firm value. This is because carbon emissions disclosure is a form of corporate responsibility in reducing the impact of environmental damage from company activities, so this can be an attraction for investors. The second research result shows that the type of industry can increase the effect of carbon emissions disclosure on firm value. This is because companies in the high profile industry category that have a high level of sensitivity to the environment are under pressure from the public, so the company responds by conducting carbon emissions disclosure so that it can be a guarantee of the company's sustainability

Lu, Zhu, & Zhang, .(2021) investigated the impact of carbon disclosure on financial performance based on the 2011–2018 CDP report, taking the Fortune 500 companies as a sample. The study finds that for carbon-intensive industries, carbon disclosure cannot significantly contribute to the improvement of financial performance in the current period, but for carbon-non-intensive industries, carbon disclosure can significantly contribute to the improvement of financial performance in the current period, and the positive impact of carbon disclosure on financial performance in the current period can be extended to the next period. Finally, based on the findings of the empirical study, this paper puts forward policy recommendations for the construction of China's carbon disclosure system.

METHODOLOGY

3.1 Research Design
The research design employed in this study was *ex-post facto* research design. This was utilized in order to establish the meaningful relationship between environmental cost disclosure and economic value added and the effect thereof. This study was also treated as *ex-post facto* research since it basically relied on historical data (Kothari & Garg, 2014).

3.2 Population of the Study
The population of this study consisted of all the twelve (12) oil and gas companies listed on the Nigerian Stock Exchange as at 31st December, 2020. They include: 11 Plc (formerly Mobil Oil Plc); Anino International Plc; Capital Oil Plc; Conoil Plc; Eterna Plc; Ardova Plc (formerly Forte Oil Plc); Japaul Oil & Maritime Services; MRS Oil Nigeria Plc; Oando Plc; Rak Unity Petroleum Company Plc; Seplat Petroleum Development Company Plc; Total Nigeria Plc.

3.3 Sample Size and Sampling Technique
The sample size of this study comprised of eleven (11) listed oil and gas firms in the Nigeria Stock Exchange (NSE) from 2008 to 2020. Purposive sampling technique was adopted to select oil and gas companies that consistently filed their annual reports with the Nigerian Stock Exchange for the study period (2008-2020), these are: 11 Plc (formerly Mobil Oil Plc); Anino International Plc; Capital Oil Plc; Conoil Plc; Eterna Plc; Japaul Oil & Maritime Services; MRS Oil Nigeria Plc; Oando Plc; Rak Unity Petroleum Company Plc; Seplat Petroleum Development Company Plc; Total Nigeria Plc.

3.4 Model Specification
In an attempt to determine the effect of carbon disclosure practices and economic value added, we develop an empirical model to ascertain the relationship that exists between the variables. Generally, specification of account model is based on accounting theory and on the available data relating to the carbon disclosure practices being studied. The model of accounting analysis in this study will therefore follow the conventional method, and this, is in reference to the variables of interest in the model above. Diah SE., M.Si & Efita (2016).Effect of carbon emissions disclosure and corporate social responsibility on the firm value with environmental performance as variable control.

. The following model were adopted by him
$Y = \alpha + \beta1CED\ \beta2CSRI + \beta3 + EP + Prof + \beta4\ \beta5\ \beta6\ Lev + BOC + e$
where
Y = Firm Value

CED = Carbon Emissions Disclosure

CSRI = Corporate Social Responsibility Index

EP = Environmental Performance PROPER

Prof = Profitability/ Return on Assets)

Lev = Leverage /DER

BOC = Board of Commisioner

F= Functional notion

The present study will modify the model to enable the researcher to look at the topic from different perspective. Algebraically, therefore. The model to be regressed in this study is presented in a relational form as follows
EVA =F (ECD, RVG, FSZ)

Where

EVA= Economic value added

ECD= Emission carbon disclosure

RVG= Revenue growth of firm

FSZ= Firm size

With the linear expression of the model being

$EVA = bo + b_1ECD + b_2\ RGF + b_3\ FZ + u$

Where

β_0 = Autonomous or Intercept

β_1 = Coefficient of Parameter ECD

β_2 = Coefficient parameter RGF

β_3 = Coefficient of parameter FZ

3.5 Decision Rule

The test of hypothesis and the decision on whether to accept or reject each hypothesis was based on the result of the T-Test/T-Stat in the multiple regression analysis. The t-statistics was used to test the significant contribution from each predictor to the regression models. Hypothesis were tested at 5% (0.05) level of significance. The Null Hypothesis was accepted if the Probability 'Value P-value of T Stat is greater than the stated 5% level of significance otherwise reject. $P < 0,05$, Accept Ho.$P < 0.05$, Reject Ho

DATA ANALYSIS, INTERPRETATION AND DISCUSSIONS

4.0 Introduction

This study investigated the effect of carbon emission disclosure on economic value added of oil and gas firm in Nigeria stock exchange. In analyzing the data, the study adopted regression to identify the causal-effect relationship that existed between carbon emission and economic value added of oil and gas firm in Nigeria stock exchange

Table 4.1: Pairwise Granger Causality Test showing the Causal Link between ECD and EVA

Pairwise Granger Causality Tests
Date: 10/15/21   Time: 11:57
Sample: 2008 2019
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
ECD does not Granger Cause EVA	160	3.39543	0.0360
EVA does not Granger Cause ECD		0.28164	0.7549

Source: E-Views 10.0 Causality Output File, 2021

Interpretation of Diagnostic Test
Table 4.4 shows that a unilateral causality runs from emissions cost disclosure to economic value added at a P-value of 0.0360 which is statistically significant at 5% level, thereby establishing a causal relationship between ECD and EVA. Consequently, giving credence to the alternative

hypothesis that upholds that emissions cost disclosure has a significant effect on economic value added of quoted oil and gas firms in Nigeria at 5% level of significance.

Table 4.2 Fixed Effect Model (FEM) Analysis between ECD and EVA

Dependent Variable: EVA
Method: Panel Least Squares
Date: 10/15/21   Time: 11:59
Sample: 2008 2019
Periods included: 12
Cross-sections included: 16
Total panel (balanced) observations: 192

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.897709	4.146807	5.939930	0.0000
ECD	2.602968	1.626185	4.600660	0.0000
RVG	-0.099120	0.563061	-2.176037	0.0305
FSZ	0.050220	0.425614	0.117995	0.9062

Effects Specification				

Cross-section fixed (dummy variables)

R-squared	0.649204	Mean dependent var	4.905846
Adjusted R-squared	0.560682	S.D. dependent var	2.809879
S.E. of regression	2.723290	Akaike info criterion	4.935272
Sum squared resid	1283.022	Schwarz criterion	5.257628
Log likelihood	-454.7861	Hannan-Quinn criter.	5.065828
F-statistic	11.85500	Durbin-Watson stat	1.571951
Prob(F-statistic)	0.000000		

Source: E-Views 10.0, Regression Output 2021

Table 4.3 Random Effect Model (REM) Analysis between ECD and EVA

Dependent Variable: EVA
Method: Panel EGLS (Cross-section random effects)
Date: 10/15/21   Time: 12:02
Sample: 2008 2019
Periods included: 12
Cross-sections included: 16
Total panel (balanced) observations: 192
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.657265	3.917756	3.933510	0.0008
ECD	2.847548	1.513163	2.881851	0.0014
RVG	0.152454	0.547179	0.278619	0.7808
FSZ	0.060136	0.401044	0.149947	0.8810

Effects Specification				
			S.D.	Rho

Cross-section random		0.639995	0.0523
Idiosyncratic random		2.723290	0.9477

Weighted Statistics

R-squared	0.418454	Mean dependent var	3.804530
Adjusted R-squared	0.302791	S.D. dependent var	2.732856
S.E. of regression	2.729040	Sum squared resid	1400.160
F-statistic	1.178180	Durbin-Watson stat	1.348507
Prob(F-statistic)	0.319338		

Unweighted Statistics

R-squared	0.420723	Mean dependent var	4.905846
Sum squared resid	1476.774	Durbin-Watson stat	1.278548

Source: E-Views 10.0, Regression Output 2021

Table 4.4 Panel Least Square Regression Analysis testing the effect of Emissions Cost Disclosure on Economic Value Added

Dependent Variable: EVA
Method: Panel Least Squares
Date: 10/15/21   Time: 11:55
Sample: 2008 2019
Periods included: 12
Cross-sections included: 16
Total panel (balanced) observations: 192

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.532524	3.891228	6.907817	0.0000
ECD	2.980494	1.492544	4.996923	0.0000
RVG	0.304268	0.553005	2.550207	0.0128
FSZ	0.064333	0.398301	0.161520	0.8719

R-squared	0.621129	Mean dependent var	4.905846
Adjusted R-squared	0.605508	S.D. dependent var	2.809879
S.E. of regression	2.802129	Akaike info criterion	4.919250
Sum squared resid	1476.163	Schwarz criterion	4.987114
Log likelihood	-468.2480	Hannan-Quinn criter.	4.946735
F-statistic	18.52637	Durbin-Watson stat	1.580819
Prob(F-statistic)	0.000000		

Source: E-Views 9.0 Panel Regression Output, 2020

Ho$_1$: Emissions Cost Disclosure has no significant effect on Economic Value Added of quoted Oil and Gas firms in Nigeria.

Interpretation of Regression Result
Table 4.3 reveals an adjusted R^2 value of 0.605508. The adjusted R^2, which represents the coefficient of multiple determinations imply that 60.6% of the total variation in the dependent

variable (EVA) of quoted Oil and Gas in Nigeria is jointly explained by the explanatory variables (ECD, RVG and FSZ). The adjusted R^2 of 60.6% did not constitute a problem to the study because the F- statistics value of 18.52637 with an associated Prob.>F = 0.000000 indicates that the model is fit to explain the relationship expressed in the study model and further suggests that the explanatory variables are properly selected, combined and used. The value of adjusted R^2 of 60.6% also shows that 39.4% of the variation in the dependent variable is explained by other factors not captured in the study model. This suggests that apart from ECD, RVG and FSZ there are other factors that mitigate EVA of quoted Oil and Gas in Nigeria. The results in table 4.3 illustrated that ECD has a positive and significant relationship with EVA measured with a beta coefficient (β_1) = 2.980494 and t- value of 4.996923 respectively and p-value of 0.0000 which is statistically significant at 5%:

EVA = 3.532524 + 2.980494ECD + μ

This beta coefficient revealed that if ECD increases by one unit, then the sampled firms EVA would increase by 2.980494 units. In addition, Durbin-Watson test is implied to check the auto correlation among the study variables. The Durbin-Watson value is 1.580819 which is less than 2 provide an evidence of no auto-correlation among the variables.

Decision

Based on the empirical evidence that suggests that ECD has a significant positive effect on EVA of quoted Oil and Gas firms in Nigeria at 5% level of significance, thus, the alternative hypothesis of the study is accepted.

Table 4.5 Hausman Test Comparing FEM and REM on ECD and EVA

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.794713	3	0.0085

Source: E-Views 9.0 Hausman Output, 2021

The rule for Hausman test is as follows:

☐☐If the *p value* > α = 0.05 then the variable does not have a significant effect (Accept Ho).

☐☐If the *p value* < α = 0.05 then the variable has a significant effect (Accept H$_1$)

Interpretation of Post Regression Analysis

From the Hausman test result in table 4.7, the p-value is 0.0085, this is statistically significant at the conventional level of 0.05. Thus, the Fixed Effect Model (FEM) is more appropriate than the Random Effect Model (REM) in analysing the effect of emissions cost disclosure on economic value added of quoted oil and gas firms in Nigeria at 5% significant level.

Conclusions and Recommendation

This study aimed to investigate the effect of emissions carbon disclosure and economic value added. This study also investigates the role of emissions carbon disclosure in moderating the relationship between them. Carbon reporting is a new concept and the studies that analyse the carbon emissions practices worldwide are still limited. Although the number of reporting companies is increasing, there are several shortcomings in the current carbon reporting practices in terms of its commensurability and comprehensiveness of the information disclosed. Furthermore, methodological weaknesses in several studies have contributed to the mix results for relationships between carbon performance, carbon reporting and economic value added. A credible carbon reporting is crucial to enable various stakeholders to make accurate decisions. Hence, the comprehensive and transparent carbon disclosure index that can offer standardize reporting guideline is needed to enable business to focus their action on areas that will lead to substantial environmental improvement. Considering the positive relationship between emissions disclosure and economic value added, corporate firms should as a business ethic implementation cultivate the habit of emission disclosure in order to improve the social trust of stakeholders, especially customers to use environmentally friendly products which improves firms' revenue and further increases firms' profitability.

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