

Southeast Asia's Top Three Carbon-Producing Nations: Carbon Emission Disclosure and Company Valuation

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Abstract

Firm value is a key statistic for stakeholders. External stakeholders, especially investors, prioritize corporate financial allocation. This study aims to determine the link between Carbon Emission Disclosure and Firm Value, taking into account Company Size, Profitability, and Gross National Income as control. This research employed purposive sampling to identify 14 companies from Indonesia, Malaysia, and Thailand. We researched from 2017-2020. This research uses secondary data from an annual report and a sustainability report. Secondary data may be found on the websites of the Indonesia Stock Exchange, Malaysia Stock Exchange, and Thailand Stock Exchange. Also review the company's own website, which matches study sample standards. The study found a statistically significant association between carbon emission disclosure and company value. Profitability and GDP may affect the relationship between carbon emissions disclosure and business value. However, firm size may not have a significant effect on Carbon Emissions Disclosure and firm value.

Keywords: Disclosure of Carbon Emissions, Firm Value, Company Size, Profitability, GDP

INTRODUCTION

The global environmental and resource issue has elicited considerable apprehension worldwide as a result of corporations engaging in excessive energy consumption (Liu et al., 2020). The measurement of carbon emissions yields varying outcomes when considering temporal and geographical factors across various regions, including both industrialized and developing nations (Tong & Tariq, 2020). The adverse consequences of increased carbon emissions, including global warming, underscore the need to disclose carbon emissions. This disclosure is of utmost importance for several stakeholders, including the government, investors, regulators, and the general public (Tan et al., 2020).

Table 1. CO₂ Trend Report in 2015-2017

Country	CO ₂ Emissions					
	2015		2016		2017	
Brunei Darussalam	6,95	Mt	7,54	Mt	9,55	Mt
Cambodia	8,45	Mt	9,72	Mt	11,19	Mt
Filipin	112,14	Mt	122,24	Mt	134,52	Mt
Indonesia	507,01	Mt	568,69	Mt	531,01	Mt
Laos	8,81	Mt	14,26	Mt	17,91	Mt
Malaysia	233,27	Mt	246,72	Mt	248,87	Mt
Myanmar	22,08	Mt	25,47	Mt	23,67	Mt
Singapura	62,13	Mt	40,27	Mt	39,07	Mt
Thailand	283,29	Mt	281,7	Mt	286,34	Mt
Vietnam	184,44	Mt	185,43	Mt	182,58	Mt
TOTAL	1428,6	Mt	1502,04	Mt	1484,71	Mt

Source: Our World in Data based on Global Carbon Project (2020)

The data from 2015 to 2017 indicates that Southeast Asian countries exhibited a discernibly rising trend in their carbon emission levels. Indonesia, being a constituent nation, is annually credited with the highest carbon emissions among Southeast Asian countries. On the contrary, Brunei Darussalam ranks the least as a contributor to carbon emissions among Southeast Asian nations. Based on the findings of the Climate Transparency report, Indonesia witnessed a notable 18% surge in carbon emissions between 2012 and 2017. This increase can be attributed to various sectors, including transportation, industry, and electricity generation, with the latter accounting for the largest proportion of carbon emissions in Indonesia. Additionally, it is noteworthy that Indonesia witnessed a reduction in carbon emissions in 2017. This was confirmed by the Information and Documentation Management Officer of the Ministry of Environment and Forestry, who stated that the decline was primarily attributable to the effective implementation of governmental initiatives aimed at mitigating deforestation and forest degradation.

The quality of carbon emissions disclosure information in corporate reports reflects how firm releases financial reports. Higher company disclosure, especially carbon emissions, can lower the cost of equity, which is good news for investors because it reduces investment risk in companies and increases the company's share price or value, which boosts market confidence in its performance and future prospects. Another example of carbon emissions causing stock market volatility is Singapore, where Investing reported a large stock market decrease in 2015. Singapore cut carbon emissions, according to the National Environment Agency. On April 22, Singapore signed the Paris Agreement, which emphasizes long-term global goals to keep global warming below 2°C and reaffirms the parties' efforts to reach the 1.5°C threshold. Stock exchange prices rose and stabilized afterward. Thus, the Singapore stock market rose significantly in 2017. Given the aforementioned description, this study is designated with the title "Southeast Asia's Top Three Carbon-Producing Nations: Carbon Emission Disclosure and Company Valuation".

LITERATUR REVIEW

Legitimacy Theory posits that the operations of a business are subject to oversight by the local community, which subsequently influences the community's evaluation of the business as a means of garnering support. The environmental impact on the adjacent community will be assessed if the company conducts activities that meet acceptable standards. positive in their attitude toward the enterprise. The community's overall support may be regarded either positively or negatively, contingent upon its own evaluations. Positive evaluations from the community will result in the company operating without encountering any opposition from the community. Investors will be intrigued and allocate capital if the company's management discloses in their annual report the presence of a sustainability report and a Triple Bottom Line, which subsequently affects the company's continuing concern. This interest stems from the fact that the organization is not solely profit-driven, but also places a premium on protecting the environment in the wake of its own environmental contamination; this includes the disclosure of carbon emissions. Moreover, this theory has been substantiated by the findings of numerous studies demonstrating that the disclosure of carbon emissions influences the valuation of a company.

Based on a study conducted by Zuhrufiyah & Anggraeni (2019), the use of Carbon Emission Disclosure as an independent variable has shown a significant association between Carbon Emission Disclosure and firm value. In contrast to the conclusions drawn in several other studies (Hardiyansah et al., 2021; Hardiyansah & Agustini, 2020; Iskandar & Fran, 2016; Kelvin et al., 2017; Kurnia, 2021; Kurnia et al., 2020; Soewarno et al., 2018; Yan et al., 2020), it can be argued that the association under consideration is influenced by the intermediary factor of financial performance. The link is influenced by environmental performance, which functions as both an independent and moderating variable. This illustrates the company's self-valuation. According to the research conducted by Cholida & Kawedar (2020), it has been shown that the disclosure of carbon emissions, considered as the dependent variable, also has an influence on the value of a corporation. In conjunction with the previously stated studies conducted by Hermawan et al. (2018), and (Nasih et al., 2019), many more elements may be identified that provide further credence to this assertion. These aspects include firm size, profitability, stock response, and the operational performance of the business. According to Gabrielle & Toly (2019), in other research, Carbon Emission Disclosure is identified as an independent variable, whereas

Environmental Performance is considered a moderating variable in relation to Firm Value. The findings of their study indicate that the disclosure of carbon emissions, when considered alongside factors such as business size, leverage, and profitability, has a significant impact on business Value.

There is a positive correlation between the extent of carbon emission disclosure undertaken by a firm and its overall value. Consequently, such companies are more likely to generate more profits for their stakeholders. However, of more significance is the fact that the organization has garnered legitimacy from the individuals within its immediate vicinity. Based on the aforementioned description, the hypothesis stated in this research study is as follows.

Ho: Disclosure of carbon emissions has no influence on increasing the value of a company

Ha: Disclosure of carbon emissions has an influence on increasing the value of a company

RESEARCH METHODS

The study was conducted by researchers who utilized secondary data obtained from various sources. These sources included the official websites of the Indonesia Stock Exchange (www.idx.co.id), the Malaysia Stock Exchange (www.bursamalaysia.com), and the Bursar Thailand Securities (www.set.or.th). Additionally, data was collected from the official websites of the respective central banks, the companies involved, and the World Bank. This study focuses on examining the impact of carbon emission disclosure levels on business value. The analysis includes three control variables: profitability, firm size, and gross national income. The data used in this study was gathered by researchers from a comprehensive collection of sources, including public data from each firm listed on the stock market of respective countries, data from each country's central bank, and information available on the official websites of the companies. Hence, the requisite information required for this research endeavors comprises:

1. The carbon emission disclosure data was sourced from the official Carbon Disclosure Project website, indicating that the corporation continuously provided information on carbon emissions during the study period spanning from 2017 to 2020.
2. The valuation of a company may be determined by multiplying the share price by the number of outstanding shares for a certain time. The researchers acquired the data pertaining to firm valuation from the central banks of respective countries, in conjunction with data sources from the stock markets of those countries.
3. The size of a corporation may be determined by assessing the total worth of its assets, which can be derived from financial records as well as the yearly reports provided by the firm.
4. Profitability may be assessed by calculating the ratio between earnings before tax (EBT) and the nominal total assets held by the firm. This data can be gathered from financial records, including the annual reports of individual companies.
5. The Gross National Income (GNI) is determined by using the atlas method conversion factors, as provided by the World Bank. The official World Bank website provides access to the gross national income statistics with the atlas method conversion factor.

The selection of companies for the study was not based on sector, but rather on those listed on the official Carbon Disclosure Project internet page. This platform has established collaborations with over 50% of global market capitalization companies and is recognized as the largest corporate environmental disclosure platform worldwide (Carbon Disclosure Project, 2020). The researcher used the Purposive Sampling technique to choose firms for the research. Consequently, a certain number of companies were excluded from consideration, while another number of companies were chosen for inclusion in the study.

Table 2. Sample Selection

No.	Criteria	Number of Companies	Amount of data
1.	Companies are officially enrolled on the Carbon Project Disclosure Website and have also disseminated disclosure outcomes according to the requisite data sought by researchers.	74	149
2.	The disclosure practices of companies listed on the Carbon Project Disclosure Website exhibit inconsistency in their annual reporting between the years 2017 and 2020.	(58)	(85)
3.	Companies situated in the Southeast Asia region's three most populous nations are revealing their carbon emissions. However, these companies need data confirmation from the respective stock exchanges of each country.	(2)	(8)
4.	The companies lacks a comprehensive annual report including the years 2017 to 2020.	(0)	(0)
5.	Insufficient data pertaining to several factors used by researchers is evident.	(0)	(0)
Total		14	56

Source: Data processed by researcher

Table 3. Research Sample

No.	Kode	Nama Perusahaan	Tahun
Indonesia			
1	ITMG	PT Indo Tambangraya Megah Tbk.	2020
2	ITMG	PT Indo Tambangraya Megah Tbk.	2019
3	ITMG	PT Indo Tambangraya Megah Tbk.	2018
4	ITMG	PT Indo Tambangraya Megah Tbk.	2017
Malaysia			
5	1961	IOI Corporation Berhad	2020
6	1961	IOI Corporation Berhad	2019
7	1961	IOI Corporation Berhad	2018
8	1961	IOI Corporation Berhad	2017
9	1155	Malayan Banking	2020
10	1155	Malayan Banking	2019
11	1155	Malayan Banking	2018
12	1155	Malayan Banking	2017
Thailand			
13	BANPU	Banpu Public Company Limited	2020
14	BANPU	Banpu Public Company Limited	2019
15	BANPU	Banpu Public Company Limited	2018
16	BANPU	Banpu Public Company Limited	2017
17	CPF	Charoen Pokphand Foods Public Company Limited	2020
18	CPF	Charoen Pokphand Foods Public Company Limited	2019
19	CPF	Charoen Pokphand Foods Public Company Limited	2018
20	CPF	Charoen Pokphand Foods Public Company Limited	2017
21	DELTA	Delta Electronics (Thailand) Public Company Limited	2020
22	DELTA	Delta Electronics (Thailand) Public Company Limited	2019
23	DELTA	Delta Electronics (Thailand) Public Company Limited	2018

No.	Kode	Nama Perusahaan	Tahun
24	DELTA	Delta Electronics (Thailand) Public Company Limited	2017
25	GPSC	Global Power Synergy Public Company Limited	2020
26	GPSC	Global Power Synergy Public Company Limited	2019
27	GPSC	Global Power Synergy Public Company Limited	2018
28	GPSC	Global Power Synergy Public Company Limited	2017
29	IVL	Indorama Ventures Public Company Limited	2020
30	IVL	Indorama Ventures Public Company Limited	2019
31	IVL	Indorama Ventures Public Company Limited	2018
32	IVL	Indorama Ventures Public Company Limited	2017
33	KBANK	Kasikornbank Public Company Limited	2020
34	KBANK	Kasikornbank Public Company Limited	2019
35	KBANK	Kasikornbank Public Company Limited	2018
36	KBANK	Kasikornbank Public Company Limited	2017
37	MINT	Minor International Public Company Limited	2020
38	MINT	Minor International Public Company Limited	2019
39	MINT	Minor International Public Company Limited	2018
40	MINT	Minor International Public Company Limited	2017
41	PTT	PTT Public Company Limited	2020
42	PTT	PTT Public Company Limited	2019
43	PTT	PTT Public Company Limited	2018
44	PTT	PTT Public Company Limited	2017
45	PTTEP	PTT Exploration and Production Public Company Limited	2020
46	PTTEP	PTT Exploration and Production Public Company Limited	2019
47	PTTEP	PTT Exploration and Production Public Company Limited	2018
48	PTTEP	PTT Exploration and Production Public Company Limited	2017
49	SCC	The Siam Commercial Bank Public Company Limited	2020
50	SCC	The Siam Commercial Bank Public Company Limited	2019
51	SCC	The Siam Commercial Bank Public Company Limited	2018
52	SCC	The Siam Commercial Bank Public Company Limited	2017
53	TRUE	True Corporation Public Company Limited	2020
54	TRUE	True Corporation Public Company Limited	2019
55	TRUE	True Corporation Public Company Limited	2018
56	TRUE	True Corporation Public Company Limited	2017

Source: Data processed by researcher

Depict descriptive statistical analysis as the initial test. Descriptive Statistical Analysis, as described by (Ghozali, 2018), is a methodological approach used to provide a comprehensive overview of data through the utilization of various statistical measures. These measures include the mean (average), sum, range, maximum and minimum values, variance, kurtosis, standard deviation, and skewness, which help to identify and understand the distributional characteristics of the data. The primary goals of the Descriptive Statistical Analysis Test include providing an accurate and clear description of sample characteristics, with the intention of facilitating effective communication of the information to others. The Descriptive Statistical Analysis Test employed by researchers comprises independent variables and dependent variables, supported by a number of control variables. Specifically, the independent variable is the Carbon Emission Disclosure (CED), while the dependent variable is the Company Value, measured by the Market Capitalization value (FV). Additionally, the Size Company (FS), Profitability (ROA), and Gross National Income (GNI) serve as control variables.

The researcher established certain criteria for sample selection, resulting in a total of 56 data points collected. The data sample was collected from a cohort of 14 organizations across three countries: Indonesia, Malaysia, and Thailand. The data covers the time period from 2017 to 2020. Hence, the researchers acquired data from a total of 14 organizations, resulting in a cumulative dataset of 56 data points when multiplied by four periods. The researchers used descriptive statistical tests to collect and present the data, which included the standard deviation, mean, minimum, and maximum values of each variable, including the independent variable, dependent variable, and control variable.

Table 4. Descriptive Statistical Results

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
CED	56	.22	.89	.5952	.13970
FS	56	20.87	25.56	22.8909	1.47976
ROA	56	.49	26.65	5.8907	5.46961
GNI	56	26.46	27.72	26.8543	.27104
FV	56	9.62	24.46	19.4037	4.50001
Valid N (listwise)	56				

Source: Data Processing Results with SPSS 26

Next, the absence of outlier model data in the researcher's analysis may provide normality test results indicating non-normal distribution of the data in the research model. In order to get reliable results from normality tests conducted in SPSS, it is important to exclude outliers or extreme data points. The presence of outlier data was observed by researchers, with a total count of four instances. Hence, the researcher has a surviving dataset consisting of a total of 52 observations, indicating that the data inside the model exhibits a normal distribution. The results of the normality assessment, after the exclusion of data points with extreme values, are shown in Table 5.

Table 5. Normality Test Results
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		52
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	2.35109666
	Most Extreme Differences	
	Absolute	.159
	Positive	.140
	Negative	-.159
Test Statistic		.159
Asymp. Sig. (2-tailed)		.002 ^c
Exact Sig. (2-tailed)		.130
Point Probability		.000

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Source: Data Processing Results with SPSS 26

After excluding the outlier data, the researcher conducted a normality test and determined that the data had a normal distribution. The observed value of 0.130, representing a percentage larger than 0.05 in the Exact Sig section, indicates the usual value. The statistical test used in this study is a two-tailed test. The results of the normality test were obtained utilizing the Exact Sig approach technique. The two-tailed test yields a p-value of 0.130, indicating that researchers may infer that the residual values of the data follow a normal distribution.

The second test is the Multicollinearity Test, which aims to ascertain the presence of any connection or link between the independent variables and the regression model. A regression model is considered to be of high quality if it exhibits no correlation with the independent variables.

Table 6. Multicollinearity Test Results

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	CED	.966	1.036
	FS	.777	1.287
	ROA	.561	1.781
	GNI	.672	1.489

a. Dependent Variable: FV

Source: Data Processing Results with SPSS 26

The reported results of the multicollinearity test indicate that all four variables possess a Variance Inflation Factor (VIF) value that is less than 10. The data presentation, which is based on the Variance Inflation Factor (VIF) value, indicates the absence of multicollinearity within the study dataset. In addition, it is noteworthy that the four variables under consideration exhibit a Tolerance value over 0.10, so suggesting the absence of multicollinearity within the dataset used for this study.

The primary objective of doing the third test, known as the heteroscedasticity test, is to ascertain the presence of variations in variance that arise from residuals across different studies inside a regression model.

Table 7. Heteroscedasticity Test Result

Model	Sig.
1 (Constant)	.523
CED	.460
FS	.176
ROA	.070
GNI	.465

a. Dependent Variable: RES_2

Source: Data Processing Results with SPSS 26

The reported results of the heteroscedasticity test indicate that the four variables have a probability value (sig) greater than 0.05. The significance value (Sig), which is reported to be more than 0.05, suggests that the researcher's analysis did not find any evidence of heteroscedasticity in the reviewed study data.

Furthermore, to determine if period t has a confounding error relative to period $(t-1)$ or earlier periods, the autocorrelation test—the last classical assumption test—must be performed and the table suggests the research had no autocorrelation.

Table 8. Autocorrelation Test Results

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.624 ^a	.390	.333	2.55268	2.143

a. Predictors: (Constant), GNI, CED, FS, ROA

b. Dependent Variable: FV

Source: Data Processing Results with SPSS 26

RESULT AND DISCUSSION

Adjusted R Square value is 0.348, as can be seen from the data processing findings that have been provided. The Adjusted R Square value provides insight into the extent to which the independent

variable, namely carbon emissions disclosure, can account for the variability seen in the dependent variable, specifically business value, with a value of 34.8%. Thus, additional variables not included in this research or evaluated account for 65.2% (100% -34.8%) of the variation in the dependent variable.

Table 9. R² Test Results
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.632 ^a	.399	.348	3.60145

a. Predictors: (Constant), GNI, FS, CED, ROA

b. Dependent Variable: FV

Source: Data Processing Results with SPSS 26

Moreover, it is evident from the supplied data that the statistical significance (Sig.) supports the validity and appropriateness of the researcher's regression model. This is shown by the substantial Sig. value of 0.000, which is below the conventional threshold of 0.05. Given that the significance level (Sig.) is deemed suitable, the subsequent step involves evaluating the Fcount value in relation to the Ftable value. If the calculated F-value (Fcount) exceeds the critical F-value (Ftable), it may be concluded that the model has statistical significance. Based on the above information, it can be inferred that the F-table value is 2.57, considering the degrees of freedom ($Df_1 = 4$ and $Df_2 = 47$). In general, the findings of the F Test suggest that all the variables examined in this study, including the independent variable of carbon emissions disclosure, as well as the control variables of company size, profitability, and gross national income, collectively exert an influence on the dependent variable of company value.

Table 10. F Test Results
ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	405.159	4	101.290	7.809	.000 ^b
Residual	609.610	47	12.970		
Total	1014.769	51			

a. Dependent Variable: FV

b. Predictors: (Constant), GNI, FS, CED, ROA

Source: Data Processing Results with SPSS 26

Based on the analysis of data using SPSS version 26, the researcher can infer that the t-test results indicate a significant relationship between the independent variable of carbon emission disclosure and the dependent variable (Table 11). Specifically, the obtained significance value of 0.032 is below the conventional threshold of 0.05, leading to the rejection of the null hypothesis (H_0) and acceptance of the alternative hypothesis (H_a). Furthermore, the regression analysis reveals a positive coefficient of 7.081 for carbon emission disclosure in relation to company value. This suggests a discernible positive relationship between the carbon emission disclosure variable and the firm value variable. Hence, this observation suggests that there exists a positive correlation between the level of carbon emission disclosure and the future valuation of a firm. The findings derived from the analysis of data pertaining to the t-test suggest that the impact of carbon emissions disclosure on firm value is influenced by many other variables, including profitability and gross national income. The potential for increased firm value in the future may be attributed to a robust level of carbon emission disclosure. However, it is important to note that this outcome is contingent upon other circumstances, including profitability and gross national income.

Table 11. T Test Results

Model		Coefficients ^a		Standardized Coefficients Beta	t	Sig.
		Unstandardized Coefficients B	Std. Error			
1	(Constant)	-275.222	93.493		-2.944	.005
	CED	7.081	3.200	.262	2.213	.032
	FS	-.102	.370	-.033	-.275	.785
	ROA	.326	.161	.250	2.019	.049
	GNI	10.892	3.537	.382	3.079	.003

a. Dependent Variable: FV

Source: Data Processing Results with SPSS 26

The findings of the t-test conducted in this study are incongruent with the research conducted by Kurnia et al. (2020), which posited that carbon emissions disclosure does not have any impact on business value. This discrepancy suggests that elevated levels of carbon emissions disclosure do not possess the capacity to enhance company value. The findings of this study indicate that Indonesia continues to prioritize voluntary disclosure of carbon emissions, which poses challenges for researchers seeking comprehensive information on carbon emission disclosure within their financial reports. The considerable expenses associated with the implementation of internal measurement systems, as well as the complexities involved in monitoring carbon emissions, often dissuade corporations from making such disclosures. The disparities shown in this study may be attributed to variations in the research population, whereby the researcher may have used a distinct scope in collecting research data.

Nevertheless, a number of additional study findings (Anggraeni & Hadiprajitno, 2013; Hardiyansah et al., 2021; Hardiyansah & Agustini, 2020; Yan et al., 2020; Zuhrufiyah & Anggraeni, 2019) indicate a noteworthy and favorable correlation between carbon emissions disclosure and business value. The findings of multiple studies suggest that investors take into account factors beyond a company's profit benchmark or typical level of profitability when evaluating the performance of its management. However, investors also consider the company's prioritization of environmental considerations and its accountability for any adverse repercussions resulting from its actions. In this particular instance, the findings of the t-test analysis conducted by researchers indicate a notable and affirmative impact of carbon emissions disclosure.

The findings of the study also suggest a correlation with the triple bottom line theory, which encompasses three pillars that need to be adopted by companies: profit-oriented, people-oriented, and planet-oriented. With respect to the first pillar, the concept of a profit-oriented corporation pertains to the organization's capacity to make financial gains. This aspect might be deemed significant if it has the potential to augment the company's resource base, hence facilitating the execution of its operational activities. The disclosure of carbon emissions serves as an extra mechanism for enterprises to enhance their public perception and reputation. The firm's future viability is likely to be enhanced if it can cultivate a good public image within the community. This is because the community perceives the company as being conscientious about environmental matters, which contributes to a favorable perception of the company's ongoing operations. Hence, the provision of information pertaining to carbon emissions presents a supplementary avenue for corporations to broaden their market reach, hence potentially yielding favorable financial outcomes for the firm in question.

Regarding the second key factor, people, enterprises disclosing their carbon emissions helps lessen public backlash to the ecological impacts of their local activities. Companies revealing carbon emissions are proactive environmental measures that support public and local goals. This coordinated endeavor seeks to mitigate climate change's massive impacts. When this happens, the community will likely support the enterprise, adding value to its operations and helping the environment.

Planets, the third pillar, addresses environmental ecology. A micro and a corporate have a reciprocal relationship. The firm may benefit from natural resources and a stable economic ecology if it does not damage them. However, when a company disrupts the natural ecosystem, nature may reply with a natural disaster. Nature may wipe off a company's resources, which might harm the corporate environment. Some say that these three pillars are essential for a company's long-term success. A company's activities will remain uninterrupted if it can contribute to these three fundamentals.

This research is supported by legitimacy theory, which holds that corporations disclosing carbon emissions want stakeholder credibility. Legitimacy theory states that organizations must balance their own goals with stakeholder requirements to reduce environmental damage. Once the firm has established its legitimacy, stakeholders should support its reputation if it continues its environmental contributions. The company's carbon emission declaration shows its environmental responsibilities. Thus, disclosing carbon emissions by firms may boost their market value. A company's worth may also be determined by its nominal share value, which indicates investor interest. This means that the firm's disclosure of carbon emissions increases investors' interest in investing in it.

The appeal of this phenomenon stems from the underlying belief that the corporation demonstrates a genuine concern for the environment, so enabling it to effectively address societal demands. Additionally, the firm garners support from stakeholders, thereby incentivizing the disclosure of carbon emissions. Consequently, the disclosure of carbon emissions by a firm has a significant impact on investors' views, ensuring the company's business continuation and leading investors to see it as a secure investment opportunity (Hardiyansah & Agustini, 2020).

Furthermore, it is worth noting that the emerging trend highlighting the substantial influence of ESG disclosure on organizations is their meticulous consideration of language while expressing the desired information. One method involves employing language hedging to enhance the precision of carbon emissions disclosure (Bwarleling & Kinasih, 2022). Hedging is widely recognized as a beneficial and important practice in terms of politeness (Nugroho, 2002). Furthermore, the writers acknowledge that cultural factors also have an impact on the utilization of hedging in writing (Nugroho, 2014). Hence, more study is imperative to comprehend the impact of culture on the utilization of hedges in sustainability reports authored by non-native or second language speakers.

The findings from the aforementioned presentation of t-test data indicate that the significance value of the company size control variable is 0.785, exceeding the threshold of 0.05. Consequently, this control variable does not exert any significant influence in regulating the association between the independent disclosure variables. The study examines the relationship between carbon emissions and firm value, with carbon emissions being the dependent variable.

The Effect of Carbon Emission Disclosure on Company Value which is controlled by Company Size

The t-test data processing outcomes of this study exhibit disparities when compared to the findings of Nasih et al.'s research. The study conducted in 2019 provides evidence supporting a favorable and statistically significant association between carbon disclosure and firm size. Based on the principles of legitimacy theory, it can be observed that larger corporations are more vulnerable to increased societal and stakeholder pressure. Consequently, these companies are more inclined to engage in greater levels of carbon emission disclosure. This strategic action is undertaken with the aim of enhancing the company's perceived legitimacy in alignment with prevailing norms and values. It is important to note that such disclosure practices are influenced by relevant regulations established by governmental bodies.

Nevertheless, the outcomes of the t-test data analysis align with previous study findings (Kholmi et al., 2020; Nurlis, 2019) indicating that the variable of firm size does not have any significant impact on the extent of carbon emissions disclosure. It has been argued that the absence of an effect can be attributed to the fact that numerous companies continue to engage in disclosures beyond carbon emissions disclosures. These companies assert that such additional disclosures enhance their public legitimacy and contend that carbon emissions disclosures do not offer any supplementary value to the organization.

Additionally, it should be noted that the size of a corporation, as measured by its total assets, does not impact the reporting of environmental information, particularly in regards to carbon emissions.

The voluntary nature of carbon emission declarations in many nations contributes to a dearth of carbon emission disclosure levels across these corporations. The production of high-quality sustainability reports is a significant challenge for organizations of varying sizes. High-quality sustainability reports include several aspects pertaining to environmental concerns, including the disclosure of carbon emissions.

The Effect of Carbon Emission Disclosure on Company Value which is controlled by Profitability

The presented t-test results indicate that the profitability control variable has a significance value of 0.049, which exceeds the threshold of 0.05. Consequently, this control variable does not exert any significant influence on the relationship between the independent variable, carbon emission disclosure, and the dependent variable, namely the company's value.

The findings from the data analysis pertaining to the t-test align with the research conducted by Kelvin et al. (2017). This prior study demonstrates that the operational performance variable, which is measured by calculating Return On Equity, serves as a mediating variable that has a positive and statistically significant impact on the Company value, as proxied by the Tobins ratio Q. The findings of Kurnia et al. (2020) align with the present study, indicating that the disclosure of carbon emissions affects the value of companies by means of financial performance acting as a mediating factor. Companies that choose to publish their carbon emissions tend to have a positive reputation and see increased financial gains as a result of their commitment to using ecologically sustainable goods. Increased sales have the potential to result in elevated levels of profitability. The rise in share prices may be attributed to the incentive that investors get from improved profitability, leading them to invest their money. The act of publicly revealing carbon emissions serves as an indicator that a firm has the potential to enhance its future performance via the implementation of environmentally responsible practices. The implementation of carbon emission disclosure is expected to enhance financial performance, hence augmenting the overall worth of the organization.

There are alternative study findings that diverge from the conclusions produced by previous researchers. Specifically, Kholmi et al. (2020) and Prasetyo & Sri Harta Mimba, (2021) provide evidence suggesting that the profitability variable does not have any significant impact on the degree of carbon emission disclosure. In essence, doing an examination of the firm's varying levels of profitability does not ensure that the corporation would allocate these earnings towards the implementation or disclosure of carbon emissions. It is plausible that stakeholders may exert pressures on the corporation with regards to other elements beyond the mere disclosure of carbon emissions.

Financial strength does not ensure a company's willingness to disclose environmental information, especially carbon emissions. Due to its focus on financial benefits, the corporation may have ignored carbon emission mitigation efforts like adopting ecologically friendly equipment. This shows that carbon emission transparency does not affect corporate profitability. This research found no significant association between corporate profitability (ROE) and carbon emission transparency. It seems that profitability does not alter carbon emission disclosure in this case, suggesting that financial gains and costs are unimportant. The costs of emission reduction efforts are disproportionate to the firm's financial advantages. It is commonly known that rising environmental expenses do not boost corporate profits. The lack of a matching increase in profitability to offset the rising costs of disclosure suggests that companies revealing their carbon emissions gain nothing.

Researchers may conclude that the firm's profitability is adequate. If the corporation discloses carbon emissions, investors are interested. Considerations for the company's profitability include its operational management and carbon emission stewardship. Similar to earlier research, a high level of profitability indicates the use of environmentally friendly products or enterprises who publicly disclose their carbon emissions. Thus, the discrepancy between this study and prior research, which suggests that a company's profitability does not affect its carbon emissions disclosure, may be due to stakeholders' lack of awareness of environmental concerns. This research found that profitability has a substantial influence, indicating stakeholders are more environmentally conscious.

The Effect of Carbon Emission Disclosure on Company Value which is controlled by Gross National Income

The presented t-test results indicate that the gross national income control variable has a significance value of 0.03, which exceeds the threshold of 0.05. Consequently, this control variable exerts a controlling effect on the relationship between the independent variables of emission disclosure. The study examines the relationship between carbon emissions and business value, with carbon emissions being the independent variable and company value being the dependent variable.

The findings obtained from the data analysis pertaining to the t-test, as presented in the study conducted by Zuhrufiyah & Anggraeni (2019), provide consistent results indicating a strong impact of gross national income on firm value. Based on the findings of this study, it can be inferred that the presence of non-local investors in the sampled firms is attributable to the inclusion of investors from countries that do not meet the selection criteria. In line with the established definition of gross national income and as articulated by the Central Bureau of Statistics, gross national income refers to the aggregate income possessed by the residents of a given nation, which can be influenced by various factors, including gross domestic product and net income derived from foreign sources. Net income derived from foreign sources refers to the earnings generated by production factors, specifically labor and capital, that are received and owned by local residents from overseas. This income is subsequently offset by the earnings of foreign residents residing in the host country.

In the realm of environmental economics, a prominent hypothesis known as the Environmental Kuznets Curve (EKC) or the Inverted U-Curve theory, was formulated by Simon Kuznets in 1955. This hypothesis elucidates the correlation between the environment and the economic development of a nation. This theory posits that a nation in the nascent phases of growth have the capacity to prioritize economic and social concerns above environmental considerations. This phenomenon may be attributed to the prioritization of economic development in these nations, which may inadvertently impact several other aspects. Hence, it can be argued that there exists a positive correlation between the economic development rate of emerging nations in their early stages and the extent of environmental deterioration (Firdaus, 2017) .

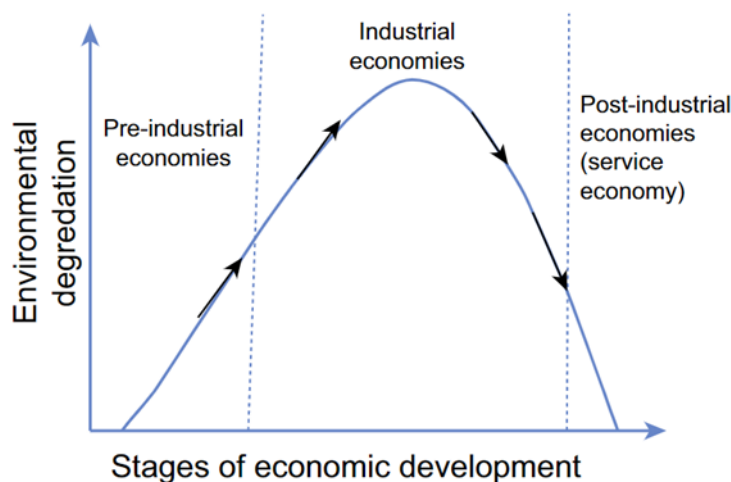


Figure 1. Kuznets Curve
Source: (Özcan & Öztürk, 2019)

A thorough observation of Figure 4.7 reveals an indicator of a pivotal moment in the progression of industrial economic growth. During the age of industrial economic advancement, the nation began the production of items mostly associated with manufacturing, thus leading to persistent environmental degradation. During the first phases of industrial economic growth, it is plausible that the nation may still be characterized by a relatively low level of affluence, thus leading to a limited public consciousness about the importance of environmental concerns. Nevertheless, throughout the latter phases of the industrialization period, there was a parallel rise in wealth levels and a heightened awareness of

environmental issues, leading to a reduction in the extent of environmental contamination. Hence, this particular phase represents a pivotal juncture in the extent of ecological deterioration inside that nation. During the concluding phase of growth within the post-industrial economic era, there is a heightened emphasis on environmental enhancement. This entails prioritizing the advancement of efficient technology and transitioning sectors towards the service industry, hence facilitating a reduction in emissions per unit of production (Özcan & Öztürk, 2019).

Thus, experts suggest that rising carbon emission transparency and gross national income may be useful indicators for external stakeholders, notably investors. In addition to economic growth, these countries' citizens are more environmentally sensitive, as indicated by company disclosures on carbon emissions. Many governments still submit Sustainability Reports voluntarily. This encourages local and foreign investors to invest in local businesses.

CONCLUSION

Scholars may therefore draw the following conclusions from the study:

1. Disclosure of carbon emissions significantly affects company value. Carbon emissions transparency positively affects corporate value.
2. Firm size does not significantly affect the relationship between carbon emission disclosure and business value. Enterprises in non-mandatory jurisdictions struggle to provide sustainability reports. Stakeholders want transparency beyond carbon emissions.
3. Profitability significantly affects the link between carbon emission disclosure and business value. The link between profit ownership and carbon footprint grows as profit ownership rises.
4. Gross national wealth significantly affects the link between carbon emission disclosure and business value. A firm's carbon emission awareness is positively correlated with its country's GDP.

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