

EFFECT OF CARBON EMISSIONS DISCLOSURE & CSR THEME ON FIRM VALUE WITH FIRM REPUTATION AS MODERATING VARIABLE

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Abstract. The purpose of this study is to examine the effect of carbon emissions disclosure and CSR themes disclosure on firm value as measured by price to book value ratio (PBV). Furthermore, this study also investigates the magnitude of a firm reputation as a moderating variable of relationship between these factors. This study uses a quantitative descriptive approach to provide evidence of the effect of carbon disclosure and CSR themes on firm value. The findings show carbon emission disclosure affects firm value while CSR themes disclosure does not. Testing with the moderating variable of firm reputation produces a sig value greater than 0.05. This indicates that firm reputation is not a moderating variable for the relationship between CSR themes disclosure and carbon emissions disclosure on firm value.

Keyword: *Sustainability Reports, CSR themes disclosure, carbon emissions disclosure, firm reputation, firm value.*

Introduction

The emergence of the Corporate Social Responsibility (CSR) award event for firms in Indonesia has become a distinctive attraction for firms in showcasing their social responsibility achievements to public. According to an internet inquiry, Indonesia holds at least 5 CSR award events annually. These five awards are Indonesia CSR Award, Bisnis Indonesia Corporate Social Responsibility Award, ICONOMICS CSR Award, Top CSR Award, and The National Center for Sustainability Reporting (NCSR) Award. Several leading companies from various business sectors, such as PT Astra International Tbk, PT Bank Central Indonesia Tbk, PT Indo Tambangraya Megah Tbk, PT Semen Indonesia (Persero) Tbk (SIG), PT Bank Rakyat Indonesia (Persero) Tbk, won the 2021 Top CSR Awards (www.beritasatu.com). Top Business magazine collaborates with several institutions hosts the yearly Top CSR Awards to reward considered successful firms that implement effective and qualified CSR programs. The event also educates the participants on improving the quality of CSR programs that support a sustainable business.

Indonesian companies are enthusiastic about social responsibility, which is inseparable from their financial performance. This is evidenced by several previous studies (Ahamed, Almsafir, and Al-Smadi 2014; Cho, Chung, & Young 2019; Fauzi & Idris 2009; Rhou, Singal, & Koh 2016; Rusli et al. 2019; Waworuntu, Wantah, & Rusmanto 2014) that analyzed the positive influence of a firm's CSR activities on its financial performance. The firm's responsibility is not only to generate profits, but it is also responsible to contribute to the welfare of society (Khanifar et al. 2012). Although the firm's CSR activities will increase costs for the firm (Iqbal et al. 2012; Khanifar et al. 2012), it cannot be denied that this CSR activity will provide benefits to the firm, such as improving relations with the community, the firm's campaigns in the media, and reputation. management (Boesso, Kumar, and Michelon 2013). In addition, based on Boesso, Kumar, and Michelon (2013), the benefits obtained by carrying out CSR activities are being able to obtain better resources, increasing employee motivation, and leading to effective marketing that can create opportunities unpredictable in the industry. Finally, according to studies of Ahamed, Almsafir, and Al-Smadi (2014), Cho, Chung, and Young (2019), Fauzi and Idris (2009), Rhou, Singal, and Koh (2016), Rusli et al. (2019), Waworuntu, Wantah, and Rusmanto (2014), there is evidence that CSR activities can improve the firm's financial performance. Furthermore, based on studies Bajic and Yurtoglu (2018), Borghesi, Chang, and Li (2019), Harun et al. (2020), and Omar and Zallom (2016), CSR activities can increase firm's market value.

CSR as corporate social responsibility is compiled in a Sustainability Report which is separate from the firm's annual financial report. The definition of Sustainability Report as summarized by Dev and Singhal (2016) is a report published by a firm or organization regarding the economic, environmental, and social impacts caused by its daily activities. Sustainability Reports can help organizations measure, understand, and communicate economic, social, and environmental performance. The Sustainability Report also presents the values and governance of the organization that demonstrates its commitment to a sustainable global economy. The Sustainability Report assessment process ensures that the organization truly pays attention to the impacts that may be caused by this sustainability issue, and allows the organization to be transparent about the risks and opportunities it faces. There are at least 6 CSR themes raised by firms in their Sustainability Reporting reports as a form of accountability in relation to community welfare, including: human resources (health and education), product safety, transparent business processes, involvement in the community, environment, and energy (al Karim and Asaduzzaman).

Apart from the six CSR themes above, there are other topics that are the focus of shareholders in assessing the firm. According to Transparency Report (2010/2011) | Ernst & Young Accountants LLP The Netherlands (n.d.), the theme of climate change has become a shareholder resolution and even the percentage of shareholder resolution has increased from 14% in 2004 to 27% in 2009. The firm's reputation also increases when the firm invests in renewable energy as an alternative energy that reduces carbon emissions and has the potential to bring economic benefits from the wider community of stakeholders. This benefit also includes increased income, positive perceptions of employees, customers, suppliers, other stakeholders who identify as environmentally friendly firms (Simnett, Nugent, & Huggins 2009), more talented and committed workers (Branco & Rodrigues 2006), and reduced fines or other compliance costs (Sharfman & Fernando 2008). Pressure from shareholders and outside organizations creates an impetus for internal firms, particularly those in the management control system, to collect and analyze information related to climate change disclosures and to comprehend the financial consequences of climate change and broader sustainability decisions (Institute of Chartered Accountants in England and Wales, 2004)

This study seeks to explore the effect of CSR disclosure and carbon emission disclosure on firm value, as revealed by many previous studies that the better the firm discloses information related to CSR themes and carbon emissions, the better the firm value (Bajic & Yurtoglu, 2018; Borghesi, Chang, & Li, 2019; Harun et al., 2020; Omar & Zallom, 2016). This study differs from previous studies in that it seeks to investigate the role of firm reputation in the relationship between CSR themes disclosure and carbon emissions disclosure on firm value.

Theoretical Background

The concept of CSR began to develop in 1950 with Bowen's (1953) definition that CSR is a form of obligation and responsibility of entrepreneurs to establish policies, make decisions, and follow guidelines in taking actions that can provide added value to society. The concept of CSR has continued to expand widely in the last decade.

Sustainability Reports (SR) is a non-financial report that provides information for all stakeholders regarding the firm's involvement in its social responsibility (Monteiro, Miller, and Horvath, 2017). The survey conducted by KPMG on company reports from 2013-2015 reported an increasing trend in Sustainability Reporting, as follows: 1) the firm's traditional financial reporting is no longer sufficient to meet the demands of the firm's internal and external parties in its contribution to sustainability development (Epstein and Buhovac, 2014), and 2) in a competitive market, disclosure of information about the firm's sustainability commitments including ethics and governance has provided Positive differences and can improve firm performance (Marimon et al., 2012).

In fulfilling its social responsibilities, firms are driven by different motivations. This difference in motivation can be explained by the theory behind CSR activities in each firm. In this study, the authors use two theories that underlie corporate social responsibility, i.e., legitimacy theory, stakeholder theory, and agency theory. Based on Omran and Ramdhony's (2015) study, legitimacy theory shows that CSR disclosure is part of the legitimacy process and is more suitable for the background of fulfilling corporate social responsibility in developed countries. Meanwhile, the stakeholder theory (stakeholder theory) offers an explanation of CSR accountability for stakeholders which seems most suitable to underlie the fulfillment of corporate social responsibility in developing countries with the pressure on regulatory compliance being less stringent compared to developed countries. In agency theory, the difference in interests between principals and agents becomes the foundation for firm performance, where accountability reporting on all activities from the firm to the principal is critical. Reports on firm activities are used as a basis for evaluating firm performance. The principal can use the disclosure of firm information, especially regarding the environment as a basis for measuring how far the firm is in achieving the expected goals. Therefore, managers must disclose reports on firm activities as a form of responsibility to the principal and the wider community.

Legitimacy Theory

Legitimacy theory proposes the existence of a real contract between firms and society, which forces firms to comply with social norms to ensure their survival (Schmelzer, 2013). CSR/SR provides legitimacy/acceptance to actions by influencing public perception in an affirmative manner and assisting firms in avoiding unwanted demands from the media (Deegan, 2002). Thus, legitimacy theory propagates the ethical dimension of CSR, in which firms are expected to comply with social norms beyond legal requirements (Carroll et al., 1991). Therefore, if a company reports significantly more disclosures, it may be motivated by legitimacy theory.

Stakeholder Theory

Stakeholder theory advocates that organizations should fairly pursue the interests of all stakeholder groups, including investors, customers, suppliers, employees, government, society, and the environment (Clarkson, 2016). These stakeholders are able to influence the performance and reputation of the organization. SR helps firms in building strong bonds with stakeholders which results in several benefits such as risk reduction, reputation enhancement and competitive advantage (Schmelzer, 2013). Stakeholder theory conforms to the discretionary dimension of CSR, which urges organizations to become good corporate citizens who contribute back to society while transcending social and legal norms (Carroll et al., 1991). Therefore, firms that voluntarily disclose CSR information with quantitative data while serving stakeholders can be sure that the firm adopts the perspective of stakeholder theory.

Agency Theory

Agency theory assumes that all individuals act in their own interests. Shareholders as principals are assumed to be only interested in increasing financial returns or their investment in the firm. Meanwhile, agents are assumed to receive satisfaction in the form of financial compensation and the conditions that accompany the relationship (Scott 2015). The difference in interests between principals and agents in agency theory becomes the basis for firm performance where accountability reporting on information on all activities from the firm to the principal is very important, reports on firm activities are used as a basis for evaluating firm performance. The principal can use the disclosure of firm information, especially regarding the environment as a basis for measuring how far the firm is in achieving the expected goals. Therefore, managers must disclose reports on firm activities as a form of responsibility to the principal and the wider community.

Stakeholder Theory states that the sustainability of a firm cannot be separated from the role of stakeholders both internally and externally with various backgrounds of different interests from each of the existing stakeholders. The firm's CSR activities can be the firm's strategy to meet stakeholders' interests in non-financial information about the firm's social and environmental impacts resulting from its activities. The better CSR disclosure by the firm will make stakeholders provide full support to the firm for all its activities aimed at improving performance and achieving the expected profit. Many previous studies have revealed the relationship between CSR and firm performance, including research conducted by (Bajic & Yurtoglu, 2018; Borghesi, Chang, & Li, 2019; Harun et al., 2020; Omar & Zallom, 2016).

In addition to Stakeholder Theory, Legitimacy Theory is the foundation of the firm's CSR activities. Firms have a tendency to use environmental-based performance and disclosure of environmental information only to gain legitimacy from the community for the firm's activities (Chariri & Ghazali 2007) and not as a form of awareness of their responsibility to the community for the firm's activities. In its business environment, the firm has a social contract with the community. Then, it is also hoped that by disclosing this information, the firm will gain legitimacy from the community, which will affect the firm's survival. Reverte (2009) also supports the opinion that legitimacy theory explicitly recognizes that business is constrained by a social contract that requires firms to demonstrate a variety of social activities. Through this disclosure, it is hoped that the firm will gain legitimacy from the community which has an impact on the survival of the firm.

Social information disclosure is also a means for firms to build a firm's reputation, gain attention from the public, and improve the legitimacy that the firm gains from its stakeholders. This causes firm managers to disclose social information in order to improve the firm's image. By disclosing

social information, it is expected to increase firm value in the eyes of its stakeholders. CSR activities of a company can be measured in a variety of ways, including through CSR themes disclosure developed by al Karim and Asaduzzaman (n.d.) and through carbon emissions disclosure which specifically measures the firm's commitment to informing activities related to the firm's attention to carbon emissions. Disclosure of the firm's CSR activities is not only used to improve the firm's reputation, but also to increase firm value as a form of corporate management responsibility to its shareholders.

Based on this description, the research model can be described as follows:

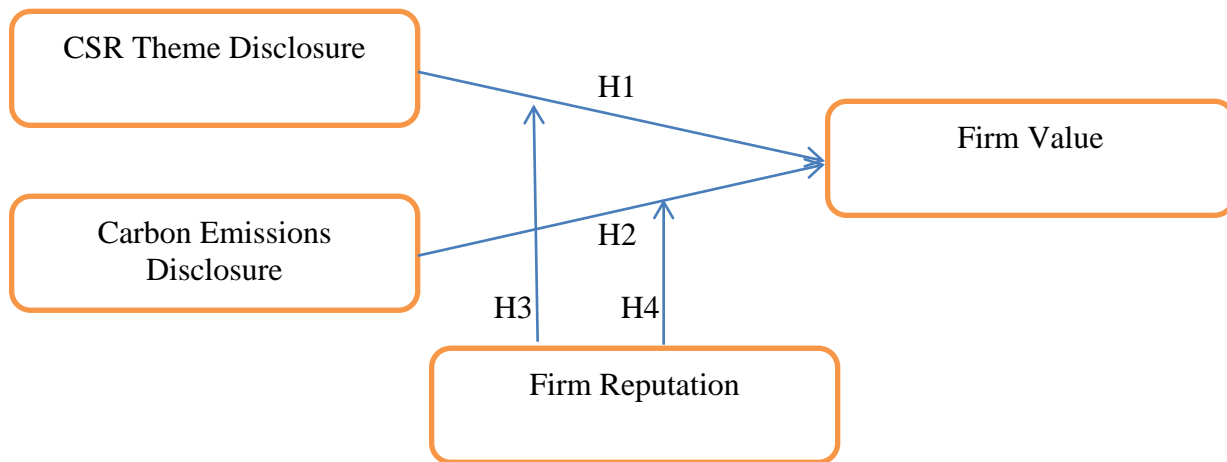


Figure 1. Research Model

Hypothesis Development

CSR themes disclosure on Corporate Value

Firm value describes how well management manages its wealth which can be seen from the measurement of the firm's financial performance. High firm value is the hope of the firm's owners because it will affect the prosperity of the shareholders. In The Triple Bottom Line concept which is the basis of CSR, the sustainability of a firm will be achieved if the firm is able to synergize economic, social, and environmental aspects with the vision and mission to be achieved by the firm. Related to firm value, the economic factor is the final result that will be reflected in firm value's shares. To achieve the expected share value and ensure shareholder prosperity, as well as the existence of sources of funding for the firm, the firm must pay attention to other aspects, specifically social and environmental aspects. Several previous studies (Bajic & Yurtoglu, 2018; Borghesi, Chang, & Li, 2019; Harun et al., 2020; Omar & Zallom, 2016) have proven that the firm's CSR activities have increased firm value.

Hypothesis 1: CSR themes disclosure has a positive effect on firm value.

Carbon Emissions Disclosure on Firm Value

Carbon emissions disclosure is an important part that is disclosed in the firm's sustainability report. Carbon emissions have taken the world's attention since the issue of global warming was raised around the world. This has attracted the attention of investors in assessing the firm's performance. Firms that demonstrate environmental responsibility, such as investing in renewable energy, alternative energy that reduces carbon emissions, have the potential to bring economic benefits to the wider community of stakeholders. These benefits increase revenue, increase positive perceptions of employees, customers, suppliers, and other stakeholders who

identify the green side of the firm (Simnett, Nugent, & Huggins, 2009), a more talented and committed workforce (Branco and Rodrigues 2006), and avoid fines or other compliance costs (Sharfman and Fernando 2008).

Several previous studies have revealed the effect of disclosing carbon emissions on firm value (Matsumura, Prakash, and Vera-Munoz 2014; Matsumura, Prakash, and Vera-Munoz n.d.; Saka and Oshika 2014).

Hypothesis 2: Carbon emissions disclosure has a positive effect on firm value.

CSR Themes Disclosure, Carbon Emissions Disclosure, and Firm reputation on Firm Value

Corporate reputation is viewed as a collective assessment of a firm based on an assessment of the financial, social, and environmental impacts associated with the firm over time. Reputation reflects the collective perception of a firm's ability to deliver quality and value. Reputation is an important asset that can provide a competitive advantage and improve firm performance.

Corporate Social Responsibility (CSR) is in the spotlight to attract the surrounding community where someone will tend to feel proud if a firm also cares about the surrounding environment, the firm is considered to also pay attention in terms of social and environmental aspects. In this case the firm's CSR activities can affect firm value with the support of the firm's reputation. Thus, it can be concluded that a good corporate reputation will be able to strengthen the relationship between CSR themes disclosure and carbon emissions disclosure to firm value.

H3: Firm reputation strengthens the effect of CSR theme disclosure on firm value

H4: Firm reputation strengthens the effect of carbon emissions disclosure on firm value

Research Method

Sample Selection and Data Collection

The research population includes all 107 firms that issued Sustainability Reports between 2018 and 2020. The sample in this study was selected using purposive sampling. The following criteria were applied in this study in determining the research sample:

- (1) Firms listed on the Indonesia Stock Exchange,
- (2) Firms submitted their reports in Indonesian rupiah.

Based on the two criteria stated above, the following firm data was collected for processing and analysis:

Table 1. Sample Selection Criteria

Criteria	Total Firm Data
The number of firms that published the 2018-2020 Sustainability Report	266
(-) Number of firms that are not listed on the Indonesia Stock Exchange	(99)
(-) Number of firms reporting data in other currencies	(34)
The number of firms whose data were used as research samples.	133

Definition of Operational Variables and Their Measurement

Dependent Variable

Firm Value

Firm value measurement in this study uses Price to Book Value (PBV) or also known as MBV (Market to Book Value). The PBV formula used is as follows:

PBV = Share Price : Book Value, where Book Value is obtained from the formula

Book Value = Equity Value : Number of shares outstanding

Independent Variables

Carbon Emissions Disclosure

The measurement of carbon emission disclosure uses a measurement developed by Choi, Lee, and Psaros (2013) using 18 checklists (1 if disclosed and 0 if not disclosed) of disclosures related to climate change and carbon emissions contained in the report presented by the firm. The 18 measurement points are divided into 5 categories: risks and opportunities of climate change (CC), calculation of greenhouse gas emissions (GHG), calculation of energy consumption (EC), reduction of greenhouse gases (RC), and accountability. costs and carbon emissions (ACC) with the following distribution of points:

Table 2. Carbon Emissions Disclosure Measurement Criteria

No	Category	Indicator	
1	Climate Change: Risks and Opportunities	CC1	Assessment/description of the risks (regulatory, physical or general) relating to climate change and actions taken or to be taken to manage the risks
		CC2	Assessment/description of current (and future) financial implications, business implications and opportunities of climate change
2	Accounting for Green House Gas (GHG) Emissions	GHG1	Description of the methodology used to calculate GHG emissions (e.g. GHG protocol or ISO)
		GHG2	Existence external verification of quantity of GHG emission- if so by whom and on what basis
		GHG3	Total GHG emissions – metric tonnes, CO2-e emitted GHG4 – disclosure of Scopes 1 and 2, or Scope 3 direct GHG emissions
		GHG4	Disclosure of Scopes 1 and 2, or Scope 3 direct GHG emissions
		GHG5	Disclosure of GHG emissions by sources (e.g. coal, electricity, etc.)
		GHG6	Disclosure of GHG emissions by facility or segment level
		GHG7	Comparison of GHG emissions with previous years
3	Energy Consumption Accounting	EC1	Total energy consumed (e.g. tera-joules or peta-joules)
		EC2	Quantification of energy used from renewable sources
		EC3	Disclosure by type, facility or segment
4	GHG Costs and Reductions	RC1	Detail of plans or strategies to reduce GHG emissions
		RC2	Specification of GHG emissions reduction target level and target year
		RC3	Emissions reductions and associated costs or savings achieved to date as a result of the reduction plan
		RC4	Cost of future emissions factored into capital expenditure planning
5	Carbon Emissions Accountability	ACC1	Indication of which board committee (or other executive body) has overall responsibility for actions related to climate change
		ACC2	Description of the mechanism by which the board (or other executive body) reviews the company's progress regarding climate change

The measurement of carbon emission disclosure is carried out with the following steps: giving a score of 1 for each item disclosed by the firm and a score of 0 if it is not disclosed by the firm. Then, the amount disclosed will be divided by the total of all criteria that must be disclosed.

$$Carbon = \frac{n}{k}$$

Where:

Carbon: Carbon emission disclosure index

n: the number of items disclosed by the firm

k: number of items contained in the carbon emission disclosure

CSR Theme Disclosure

The measurement of CSR theme disclosure uses a 5-point theme measurement taken from al Karim and Asaduzzaman (n.d.). The five CSR theme disclosures are: human resources (health and education), product safety, transparent business processes, involvement in the community, the environment, and also energy. The measurement of CSR theme disclosure also goes through a step where it will be given a value of 1 if there is a disclosure on each CSR theme or a value of 0 if there is no disclosure. Then, the amount disclosed will be divided by the total of all criteria that must be disclosed.

$$CSR_{theme} = \frac{m}{p}$$

Where:

CSR_{theme}: CSR theme disclosure index

m: the number of items disclosed by the firm

p: the number of items contained in the CSR theme disclosure

Moderating Variables

Firm reputation

Measurement of firm reputation uses a measure developed by Fombrun, Ponzi, and Newburry (2015) using 7 dimensions. The seven dimensions of measuring the firm's reputation consist of: products and services, innovation, workplace environment, governance, environmental responsibility, leadership, and performance. The assessment points are detailed as follows:

Table 3. Firm Reputation Disclosure Measurement Criteria

No	Dimensions	Indicators	
1	Products & Services	P1	Offers high quality products and services
		P2	Offers products and services that are a good value for the money
		P3	Stands behind its products and services
		P4	Meets customer needs
2	Innovation	I1	Is an innovative company
		I2	Is generally the first company to go to market with new products and services
		I3	Adapts quickly to change
3	Workplace	W1	Rewards its employees fairly
		W2	Demonstrates concern for the health and well-being of its employees
		W3	Offers equal opportunities in the workplace
4	Governance	G1	Is open and transparent about the way the company operates

		G2	Behaves ethically
		G3	Is fair in the way it does business
5	Citizenship	C1	Acts responsibly to protect the environment
		C2	Supports good causes
		C3	Has a positive influence on society
6	Leadership	L1	Has a strong and appealing leader
		L2	Has a clear vision for its future
		L3	Is a well-organized company
		L4	Has excellent managers
7	Performance	Pr1	Is a profitable company
		Pr2	Delivers financial results that are better than expected
		Pr3	Shows strong prospects for future growth

The measurement of carbon emission disclosure is carried out with the following steps: giving a score of 1 for each item disclosed by the firm and a score of 0 if it is not disclosed by the firm. Then, the amount disclosed will be divided by the total of all criteria that must be disclosed.

$$CR = \frac{o}{z}$$

Where:

CR: Firm reputation index

o: the number of items disclosed by the firm

z: the number of items contained in the firm's reputation

Data Analysis Method

This study uses OLS (ordinary least squares) regression to examine the effect of carbon emissions disclosure and CSR themes disclosure on firm performance with firm reputation as a moderating variable in Hypotheses 1, 2, 3, and 4.

Results & Discussion

Table 4. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PBV	133	.510	7.740	2.95301	1.494747
Carbon Emission	133	.05556	.94444	.5923141	.25301098
CSR Theme	133	.28571	1.00000	.9387755	.11434754
Reputation	133	.47826	0.95652	.7584505	.09402346
Valid N (listwise)	133				

Based on the descriptive statistics data in table 4, it is clear that all variables, both independent and dependent variables, have a lower standard deviation value than the average value. This informs that all variables are homogeneous and have low variability.

Table 5. Highest and Lowest Independent Variable Information Disclosure

Disclosure	Highest		Lowest	
CSR Theme Disclosure	Environment	1	Community Engagement	0.91
Carbon Emissions Disclosure	Energy consumption accounting - disclosure by type, facility or segment	0.91	Accounting for Green House Gas (GHG) Emissions - existence external verification of quantity of GHG emission– if so by whom and on what basis	0.11
Firm reputation	Demonstrates concern for the health and well-being of its employees	1	Offers products and services that are a good value for the money	0.33

The data presented in table 5 show the most and the least information disclosed by the sample firms in this study. Most of the information disclosed on the CSR theme is about environmental issues, with as much as 100% of the total research data collected reveals environmental issues. For carbon emissions disclosure, the most widely disclosed information is about energy consumption by type, facility, and segment, with as much as 91% of disclosures were made based on research data. Meanwhile, the firm reputation variable that is most widely disclosed is information about health and comfort for employees, a comfortable work environment, and the facilities provided to its employees, which are the firm's main concern in improving the firm reputation, where this issue reaches 100% disclosure.

Table 6. Regression Analysis Results

	Model 1		Model 2		Model 3		Model 4	
	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
Firm Value	3.314	0.031	4.008	0.001	-4.753	0.674	4.880	0.047
CSR Theme	0.882	0.439			9.232	0.428		
Carbon Emission			1.780	0.001			0.214	0.956
Reputation	-2.550	0.067	-3.622	0.009	7.354	0.594	-4.663	0.111
CSR*Reputation					-10.254	0.471		
Carbon*Reputation							1.847	0.686
Adjusted R2		0.013		0.095		0.010		0.089
F (sig.)		1,889 (0,155)		7,954 (0,001)		1,429 (0,237)		5,324 (0,002)

Note: all sig values are tested at the 5% confidence level

Before performing regression testing with the moderating variable, the first step is to ensure that the moderating variable has a significant effect on the dependent variable. Based on Model 1 and Model 2 in Table 6 above, it can be seen that the firm's reputation variable has a significant effect on firm value only when tested together with the carbon emission disclosure variable with a sig value of 0.009. Meanwhile, when tested with the CSR theme disclosure variable, the firm reputation variable has no effect on firm value with a sig value of 0.067.

The sig value of the CSR theme disclosure variable is 0.439 > 0.05 indicating that the CSR theme disclosure has no effect on firm value. However, this is in contrast to previous studies (Astuti, Oktavianus, & Augustine, 2018; Bajic & Yurtoglu, 2018; Borghesi, Chang, & Li, 2019; Harun et al., 2020; Omar & Zallom, 2016) which obtained results that CSR disclosure has an effect on firm value. According to the researchers of this study, this may be due to the fact that the sample firms are firms that issue sustainability reports, so all firms must disclose the six CSR themes, i.e., themes related to human resources, product safety, fair business processes,

community involvement, the environment and energy. Thus, this causes no significant difference between the research samples.

Carbon emissions disclosure has a positive effect on firm value which can be seen from Model 2 with a coefficient value of 1.780 and a sig value of 0.01. These findings differ from Matsumura, Prakash, and Vera-Muoz (n.d.) which concluded that there is a negative effect between carbon emissions and the firm's market value. Based on the results of this study, it can be concluded that carbon emissions disclosure can increase firm value.

However, the regression results in Model 3 and Model 4 are when testing the moderating variable of corporate reputation on the relationship between disclosure of the CSR theme to firm value in Model 3 and testing the moderating variable of corporate reputation on the relationship between disclosure of the theme of carbon emissions and firm value in Model 4. Both show that there is no influence between the independent variables of CSR theme disclosure and carbon emission disclosure on the dependent variable of firm value where each sig value exceeds 0.05. This shows that the variable of firm reputation is not a moderating variable between the relationship of the CSR theme disclosure variable and carbon emissions disclosure to firm value.

The Effect of CSR Theme Disclosure on Firm Value

The results showed that CSR themes disclosure has no effect on firm value. However, previous studies (Bajic & Yurtoglu, 2018; Borghesi et al., 2019; Harun et al., 2020; Omar & Zallom, 2016) found that CSR disclosure has an effect on firm value. This may be because the sample firms are firms that issue sustainability reports, so all firms must disclose the six CSR themes, i.e., themes related to human resources, product safety, fair business processes, community involvement, environment, and energy. Therefore, this causes no significant difference between the research samples.

Effect of carbon emissions disclosure on Firm Value

The results show that carbon emissions disclosure has a positive effect on firm value. The results of this study are in line with Saka and Oshika (2014), but do not support the results of Matsumura et al. (2011), which concludes that there is a negative influence between carbon emissions and the firm's market value. The results of this study are also not in line with the results of Sudibyo (2018), which concludes that there is no relationship between carbon emissions disclosure and firm value. Based on the results of this study, it can be concluded that carbon emissions disclosure can increase firm value.

The Role of Corporate Reputation in Moderating the Effect of CSR Themes Disclosure and Carbon Emissions Disclosure on Firm Value

The results above reveal that the firm's reputation as an independent variable has an influence on firm value even though the effect is negative. This can imply that the higher the firm's public reputation, the lower the firm's value. The results of this study are not in line with Iwu-Egwuonwu and Chibuike (2010) who revealed that firm equity is actually determined by the firm's reputation, and that building a strong reputation is a necessary foundation for today's firms that want to win the competition, increase market prospects and financial performance, and also increase the viability of the firm. The results of the above moderation test conclude that firm reputation does not moderate the relationship between CSR themes disclosure and carbon emissions disclosure on firm value. This may be because the reputation of the firm is not the right moderating variable between the three variables. The test results reveal the effect that occurs on firm value when the firm's reputation stands as an independent variable.

Conclusions, Implications, and Limitations

This study makes effort to analyze the effect of CSR disclosure which is divided into two separate variables, CSR themes disclosure and carbon emissions disclosure, on firm value. Based on the results of the study using multiple regression, it is obtained that only carbon emissions disclosure has an effect on firm value, while CSR themes disclosure has no effect on firm value.

This study also tries to analyze the influence of firm reputation on firm value, and the results of the study state that firm reputation has a negative effect on firm value. However, when the firm's reputation was tested as a moderating variable in the relationship between CSR themes disclosure and carbon emissions disclosure on firm value, it was found that none of the variables had an effect on firm value. This shows that the firm's reputation variable is not a moderating variable for CSR themes disclosure and carbon emissions disclosure on firm value.

The results of this study have implications for the industry and investors in analyzing the factors that can affect the market value of the firm. The higher the disclosure of a firm's carbon emissions, it can also increase firm value concerned. In this case, the firm can focus on providing as much and as clear disclosure information as possible for the public and investors because this can bring an increase to firm value.

The limitation of this study is that all samples are firms that issue Sustainability Reports, so this can have an impact on research results which reveal that CSR themes disclosure has no effect on firm value. In addition, all data on independent variables were obtained with subjective considerations, this can also have an influence on the assessment and have an impact on the results of the study.

Suggestions for further research is to re-test the three independent variables in this study, i.e., CSR themes disclosure, carbon emissions disclosure, and the firm's reputation on firm value by using a sample of all firms, those that issue Sustainability Reports and those that do not.

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