

Leverage Moderator of Carbon Emission Disclosure, Corporate Social Responsibility, and Firm Size on Profitability

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Abstract—This study examines the effect of Carbon Emission Disclosure, Corporate Social Responsibility, and firm size on profitability, with leverage as a moderating variable, in manufacturing companies listed on the Indonesia Stock Exchange during the 2022-2024 period. This study employs a quantitative approach using secondary data obtained from annual reports and sustainability reports, resulting in 153 firm-year observations selected through purposive sampling. Data were analyzed using Moderated Regression Analysis (MRA) with IBM SPSS. The results show that Carbon Emission Disclosure and Corporate Social Responsibility have a positive and significant effect on profitability, while firm size has no significant effect. Leverage does not moderate the relationship between Carbon Emission Disclosure and firm size on profitability; however, leverage weakens the relationship between Corporate Social Responsibility and profitability. This finding is consistent with Trade-off Theory, which suggests that high leverage increases fixed financial obligations such as interest payments, thereby limiting a firm's financial flexibility to maximize the economic benefits of CSR activities. These results provide insights into how sustainability disclosure and capital structure interact in influencing corporate profitability.

Keywords: Carbon Emission Disclosure; Corporate Social Responsibility; Firm Size; Leverage; Profitability

1. INTRODUCTION

Profitability is a key indicator in assessing a company's financial performance and sustainability. The level of profitability reflects management's ability to efficiently utilize available resources to generate profits and maintain long-term business continuity (Kasmir, 2021). For manufacturing companies listed on the Indonesia Stock Exchange, profitability is a major concern for investors and stakeholders, as this sector contributes significantly to the national economy (Exchange, 2023). However, in recent years, manufacturing firms have faced increasing pressure due to rising production costs, fluctuations in raw material prices, and growing demands for the implementation of sustainable business practices (Gerged et al., 2021).

Environmental issues have become a major concern in the operational activities of manufacturing companies, as this sector contributes substantially to global carbon emissions. Previous studies indicate that increased greenhouse gas emissions have intensified stakeholder pressure on companies to improve environmental transparency and accountability (Alipour et al., 2022). In emerging markets such as Indonesia, sustainability disclosure has become increasingly important as a mechanism to demonstrate corporate responsibility and compliance with environmental expectations (Chariri & Nugroho, 2022). One relevant form of environmental disclosure is Carbon Emission Disclosure, which refers to the disclosure of information related to carbon emissions generated by a company's operational activities and its environmental impact management (D'Amico et al., 2021).

Carbon Emission Disclosure serves as a communication tool between companies and stakeholders regarding environmental responsibility. Based on legitimacy theory, companies seek to obtain and maintain social legitimacy by aligning their activities and disclosures with prevailing societal values and norms (Suchman, 1995). Prior studies indicate that adequate carbon emission disclosure can enhance corporate reputation, reduce regulatory pressure, and strengthen investor confidence (Alipour et al., 2022; Zhang & Liu, 2021). Nevertheless, the implementation of carbon emission disclosure also involves additional costs, making its impact on profitability a continuing subject of debate in the sustainability and accounting literature (Chariri & Nugroho, 2022).

In addition to legitimacy theory, this study is also grounded in signaling theory. Signaling theory explains that corporate disclosures serve as signals to reduce information asymmetry between management and external stakeholders, particularly investors (Spence, 1973). Environmental and social disclosures, including carbon emission disclosure and CSR reporting, function as positive signals that reflect management quality, risk awareness, and long-term strategic orientation. Prior studies indicate that such disclosures can reduce perceived investment risk, lower the cost of capital, and enhance firm value and profitability (Liu et al., 2021; Plumlee et al., 2021). Therefore, signaling theory complements legitimacy theory in explaining how sustainability disclosures can translate into financial performance.

In addition to environmental disclosure, Corporate Social Responsibility (CSR) is an important aspect of sustainable business practices. CSR reflects a company's commitment to managing the social and environmental impacts of its operations and addressing stakeholder expectations (Buallay et al., 2021). From the perspective of stakeholder theory, companies that actively respond to stakeholder interests are more likely to gain broader support and legitimacy, which can improve financial performance and profitability (Zhao et al., 2022). However, several empirical studies indicate that CSR activities may reduce profitability in the short term due to increased operational and compliance costs, making the CSR-profitability relationship a continuing subject of debate (Li et al., 2023).

Firm size is another internal factor that may influence profitability. Larger firms generally have greater resources, wider access to financing, and a stronger ability to achieve economies of scale (Brigham & Houston, 2020). In addition, large firms are often subject to greater public scrutiny, which encourages more extensive environmental and social disclosures (Deegan, 2020). However, large firm size does not always guarantee higher profitability, as increased operational complexity and bureaucratic costs may reduce efficiency (Sutrisno, 2021).

Leverage also plays a crucial role in determining a company's financial risk and performance. Leverage indicates the extent to which a company relies on debt to finance its operations (Kasmir, 2021). According to trade-off theory, the use of debt can enhance profitability through tax benefits, but excessive leverage increases the risk of financial distress (Myers, 2021). High leverage may limit a firm's financial flexibility in allocating resources to CSR activities and carbon emission disclosure (Widyawati & Pramita, 2022).

Previous studies have examined the effects of Carbon Emission Disclosure, CSR, and firm size on profitability, but the findings remain inconsistent. Studies by (Gerged et al., 2021) and (Luo et al., 2021) found a positive relationship between carbon emission disclosure and financial performance, while (Saka & Oshika, 2020) reported no significant effect. Similarly, CSR studies show mixed results, with some indicating negative effects on profitability and others reporting positive relationships.

These inconsistencies highlight a research gap, particularly regarding the role of leverage as a moderating variable. Leverage may strengthen or weaken the effects of Carbon Emission Disclosure, CSR, and firm size on profitability, depending on a firm's financial condition. However, empirical studies that examine leverage as a moderating variable within a comprehensive research model focusing on Indonesian manufacturing companies remain limited.

Therefore, this study aims to analyze the effects of Carbon Emission Disclosure, Corporate Social Responsibility, and firm size on profitability, with leverage as a moderating variable, in manufacturing companies listed on the Indonesia Stock Exchange. This study is expected to contribute to the literature by providing empirical evidence on the moderating role of leverage in the relationship between sustainability disclosure and profitability. In addition, the findings are expected to provide practical implications for corporate management and investors in making decisions oriented toward sustainability and improved financial performance.

2. RESEARCH METHODS

2.1 Basic Research Framework

This study employs a quantitative approach with an associative research design to examine the effect of Carbon Emission Disclosure, Corporate Social Responsibility, and firm size on profitability, with leverage as a moderating variable. This approach is appropriate as the study analyzes numerical data from corporate annual and sustainability reports using statistical methods to explain causal relationships among variables (Sugiyono, 2021).

The research focuses on manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2022-2024 period. The manufacturing sector is selected due to its significant contribution to carbon emissions and increasing demands for environmental and social disclosure. The population includes all manufacturing companies listed on the IDX, while purposive sampling is applied using criteria that companies are consistently listed, publish annual and sustainability reports, and provide complete data. Based on these criteria, 153 firm-year observations are obtained.

The research framework is grounded in legitimacy theory and stakeholder theory, which explain corporate disclosure practices as efforts to gain legitimacy and maintain stakeholder support. The conceptual framework illustrates the direct effects of Carbon Emission Disclosure, Corporate Social Responsibility, and firm size on profitability, as well as the moderating role of leverage. Figure 1 presents the conceptual framework of this study.

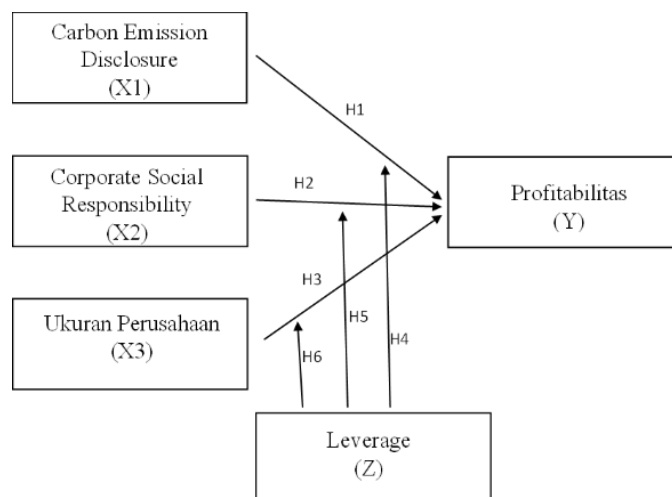


Figure 1. Conceptual framework

2.2 Data Collection and Instrumentation

This study uses secondary data obtained from the annual reports and sustainability reports of manufacturing companies. Data collection is conducted through documentation methods by accessing the official website of the Indonesia Stock Exchange and the official websites of the respective companies. Secondary data are selected because they are publicly available and audited, ensuring a high level of reliability for analysis (Sugiyono, 2021).

The research instruments consist of disclosure indices and financial ratios. Carbon Emission Disclosure is measured using a carbon emission disclosure index developed based on the Carbon Disclosure Project (CDP) guidelines. Each disclosure item is scored one if disclosed and zero if not disclosed. Corporate Social Responsibility is measured using a CSR disclosure index based on the Global Reporting Initiative (GRI) Standards through content analysis. Firm size is measured using the natural logarithm of total assets to reflect the scale of the company's operations.

Profitability, as the dependent variable, is measured using Return on Assets (ROA), which indicates the company's ability to generate profit from its total assets. Leverage, as the moderating variable, is measured using the Debt to Asset Ratio (DAR), reflecting the extent to which company assets are financed by debt. The use of these measurements is consistent with prior empirical studies, allowing for comparability of results.

2.3 Data Analysis Method

Data processing and analysis in this study are conducted using IBM SPSS software. The analysis begins with descriptive statistics to describe the characteristics of the research data, including minimum, maximum, mean, and standard deviation values. This analysis provides an overview of the data distribution for each variable.

Prior to hypothesis testing, the regression model is evaluated using classical assumption tests to ensure compliance with the Best Linear Unbiased Estimator (BLUE) criteria (Ghozali, 2021). Normality testing is conducted to assess whether the residuals are normally distributed. Multicollinearity testing is performed by examining Variance Inflation Factor (VIF) and tolerance values to ensure the absence of high correlations among independent variables. Heteroskedasticity testing is conducted to confirm that the residual variance is constant.

Hypothesis testing is performed using Moderated Regression Analysis (MRA) to examine both the direct effects of the independent variables on profitability and the moderating role of leverage. Partial effects are tested using the t-test at a 5 percent significance level, while the coefficient of determination is used to evaluate the explanatory power of the regression model. The regression equation is formulated as follows:

$$Y = \alpha + \beta_1CED + \beta_2CSR + \beta_3SIZE + \beta_4DAR + \beta_5(CED \times DAR) + \beta_6(CSR \times DAR) + \beta_7(SIZE \times DAR) + e \quad (1)$$

3. RESULTS AND DISCUSSION

3.1 Result

3.1.1 Descriptive Statistics

Table 1. Descriptive Statistics

variabel	N	Minimum	Maximum	Mean	Std. Deviation
carbon emission disclosure	153	,1111	1,0000	,538126	,2067406
corporate social responsibility	153	,1786	1,0000	,732739	,1728439
ukuran perusahaan	153	25,3133	32,7485	29,172137	1,5337284
debt to asset ratio	153	,0327	,8661	,330808	,1825778
Y_ROA	153	,04	,56	,2807	,11992
Valid N (listwise)	153				

Source: Data processed by the authors

Table 1 presents the descriptive statistics based on 153 firm-year observations of manufacturing companies listed on the Indonesia Stock Exchange during the 2022-2024 period. Carbon Emission Disclosure shows a minimum value of 0.1111 and a maximum value of 1.0000, with a mean of 0.5381 and a standard deviation of 0.2067, indicating variation in the level of carbon emission disclosure among manufacturing firms.

Corporate Social Responsibility has a minimum value of 0.1786 and a maximum value of 1.0000, with a mean of 0.7327 and a standard deviation of 0.1728. The higher mean relative to the standard deviation suggests relatively consistent CSR disclosure practices across firms. Firm size, measured using the natural logarithm of total assets, ranges from 25.3133 to 32.7485, with an average of 29.1721 and a standard deviation of 1.5337.

Leverage, proxied by the Debt to Asset Ratio, has an average value of 0.3308, indicating that approximately 33% of company assets are financed by debt. Profitability, measured by Return on Assets, has a mean value of 0.2807 with a standard deviation of 0.1199, reflecting moderate variation in profitability among the sampled firms.

3.1.2 Normality Test

Based on the results presented in Table 2, the normality test was conducted using the One-Sample Kolmogorov-Smirnov test on unstandardized residuals. The test shows an Asymp. Sig. value of 0.200, which exceeds the 0.05 significance level.

This result indicates that the residuals are normally distributed, and therefore the normality assumption required for regression analysis is fulfilled.

Table 2. Normality Test

Test	Asymp. Sig.
Kolmogorov-Smirnov	,200

Source: Data processed by the authors

3.1.3 Multicollinearity Test

As shown in Table 3, the multicollinearity test was conducted by examining the Tolerance and Variance Inflation Factor (VIF) values. The results indicate that all independent variables have tolerance values greater than 0.10, namely Carbon Emission Disclosure (0.900), Corporate Social Responsibility (0.923), firm size (0.839), and leverage (0.920). In addition, all VIF values are below 10, indicating that there is no multicollinearity issue in the regression model.

Table 3. Multicollinearity Test

variable	Tolerance	VIF
carbon emission disclosure	,899	1,112
corporate social responsibility	,915	1,093
ukuran perusahaan	,793	1,261
debt to asset ratio	,920	1,087

Source: Data processed by the authors

3.1.4 Heteroscedasticity Test

The heteroskedasticity test was conducted using the Glejser method by regressing the absolute residual values on the independent variables. As presented in Table 4, the results show that all variables have significance values greater than 0.05, namely Carbon Emission Disclosure (0.694), Corporate Social Responsibility (0.628), firm size (0.229), and leverage (0.720). Therefore, it can be concluded that the regression model does not suffer from heteroskedasticity.

Table 4. Heteroscedasticity Test

Variable	Sig.
carbon emission disclosure	,694
corporate social responsibility	,628
ukuran perusahaan	,229
debt to asset ratio	,720

Source: Data processed by the authors

3.1.5 Autocorrelation test

The autocorrelation test was conducted using the Durbin-Watson statistic. As shown in Table 5, the Durbin-Watson value is 2.172, which lies between the upper bound (du) and 4-du, namely between 1.7758 and 2.2242. Therefore, it can be concluded that the regression model does not experience autocorrelation.

Table 5. Autocorrelation test

Model	Durbin-Watson
1	2,172

Source: Data processed by the authors

3.1.6 Regression and Moderated Regression Analysis Results

The results of the multiple linear regression analysis indicate that Carbon Emission Disclosure has a positive and significant effect on profitability, with a coefficient value of 0.110 and a significance level of 0.024. Corporate Social Responsibility also shows a positive and significant effect on profitability, with a coefficient value of 0.120 and a significance level of 0.038. In contrast, firm size does not have a significant effect on profitability, as indicated by a significance value of 0.062.

Table 6. partial t-test

Model	Variable	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	,504	,185		2,734	,007
	carbon emission disclosure	,110	,048	,190	2,274	,024
	corporate social responsibility	,120	,057	,172	2,088	,038
	ukuran perusahaan	-,013	,007	-,162	-1,878	,062

Source: Data processed by the authors

The results of the Moderated Regression Analysis (MRA) indicate that the interaction between Carbon Emission Disclosure and leverage does not have a significant effect on profitability, with a significance value of 0.314. Similarly, the interaction between firm size and leverage also does not show a significant effect on profitability, as indicated by a significance value of 0.681.

However, the interaction between Corporate Social Responsibility and leverage has a negative and significant effect on profitability, with a coefficient value of -0.879 and a significance level of 0.007. These findings indicate that leverage moderates the relationship between CSR and profitability in a weakening direction, suggesting that higher leverage reduces the positive impact of CSR on corporate profitability.

Table 7. Moderated Regression Analysis (MRA)

Model	Variable	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	,462	,365		1,266	,208
	carbon emission disclosure	-,003	,109	-,005	-,027	,978
	corporate social responsibility	,437	,124	,630	3,517	,001
	ukuran perusahaan	-,016	,014	-,204	-1,121	,264
	debt to asset ratio	-,037	,921	-,056	-,040	,968
	CED_DAR	,306	,302	,329	1,011	,314
	CSR_DAR	-,879	,322	-1,198	-2,733	,007
	SIZE_DAR	,015	,035	,663	,411	,681

Source: Data processed by the authors

Referring to Table 7, the Moderated Regression Analysis (MRA) is formulated as follows:

$$Y = 0,462 + (-0,003)CED + 0,437CSR + (-0,016)SIZE + (-0,037)DAR + 0,306(CED \times DAR) + (-0,879)(CSR \times DAR) + 0,015(SIZE \times DAR) + e \quad (2)$$

3.1.7 Coefficient of Determination (R²)

The results of the coefficient of determination (R²) test indicate that the Adjusted R Square value is 0.045. This finding suggests that Carbon Emission Disclosure, Corporate Social Responsibility, and firm size collectively explain 4.5% of the variation in profitability of manufacturing companies listed on the Indonesia Stock Exchange during the 2022-2024 period.

Meanwhile, the remaining 95.5% of the variation in profitability is explained by other factors not included in this research model. The R value of 0.252 indicates a relatively weak relationship between the independent variables and profitability. The standard error of the estimate of 0.11721 reflects the level of prediction error of the regression model.

Table 8. Coefficient of Determination (R²)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,252 ^a	,064	,045	,11721

Source: Data processed by the authors

3.2 Discussion

The discussion in this study focuses on examining the partial effects of each independent variable on profitability as well as the role of leverage as a moderating variable, in accordance with the formulated hypotheses.

Although the Adjusted R Square value of 0.045 indicates relatively low explanatory power, this finding does not invalidate the significance of the regression results. In accounting and sustainability research, profitability is influenced by numerous macroeconomic and firm-specific factors such as inflation, market competition, managerial efficiency, and industry dynamics that are beyond the scope of this study. The low R² suggests that Carbon Emission Disclosure, Corporate Social Responsibility, and firm size are not the primary determinants of profitability; however, the statistically significant individual coefficients indicate that these variables have a real and measurable impact on profitability. Therefore, this study emphasizes the importance of statistical significance and theoretical relevance rather than relying solely on explanatory power.

3.2.1 Effect of Carbon Emission Disclosure on Profitability (H1)

The results of the study indicate that Carbon Emission Disclosure has a positive and significant effect on the profitability of manufacturing companies. Therefore, the first hypothesis (H1) is accepted. This finding suggests that companies that are more transparent in disclosing carbon emission information tend to gain greater legitimacy from stakeholders, which positively affects their financial performance. This result is consistent with legitimacy theory, which states that environmental disclosure serves as a corporate strategy to obtain social acceptance. Carbon emission disclosure provides a positive signal to investors regarding the company's commitment to sustainability, which can ultimately enhance profitability.

3.2.2 Effect of Corporate Social Responsibility on Profitability (H2)

The test results show that Corporate Social Responsibility has a positive and significant effect on profitability. Thus, the second hypothesis (H2) is accepted. This finding supports the view that the implementation of CSR strengthens corporate relationships with stakeholders, such as consumers, communities, and government institutions, thereby contributing to improved financial performance.

This result also supports stakeholder theory, which argues that companies that address stakeholder interests are more likely to receive sustained support, leading to higher profitability.

3.2.3 Effect of Firm Size on Profitability (H3)

The results indicate that firm size does not have a significant effect on profitability. Therefore, the third hypothesis (H3) is rejected. This finding implies that a larger asset base does not automatically enhance a company's ability to generate profits.

Large firms tend to face greater operational complexity and higher administrative costs, making asset utilization efficiency a more critical determinant of profitability than firm scale alone.

3.2.4 The Role of Leverage in Moderating the Effect of Carbon Emission Disclosure on Profitability (H4)

The analysis results show that leverage does not moderate the relationship between Carbon Emission Disclosure and profitability. Accordingly, the fourth hypothesis (H4) is rejected. This finding suggests that the economic benefits derived from carbon emission disclosure are not influenced by the company's capital structure.

Carbon emission disclosure is primarily reputational and informational in nature, thus providing legitimacy benefits regardless of whether the company has high or low leverage.

3.2.5 The Role of Leverage in Moderating the Effect of Corporate Social Responsibility on Profitability (H5)

The results indicate that leverage moderates the relationship between Corporate Social Responsibility and profitability in a weakening direction. Therefore, the fifth hypothesis (H5) is accepted. This finding shows that in companies with higher leverage levels, the positive impact of CSR on profitability becomes weaker.

This condition suggests that limited financial flexibility due to high debt burdens reduces the company's ability to fully optimize the economic benefits of CSR activities.

3.2.6 The Role of Leverage in Moderating the Effect of Firm Size on Profitability (H6)

The test results show that leverage does not moderate the relationship between firm size and profitability. Thus, the sixth hypothesis (H6) is rejected. This finding indicates that capital structure does not play a role in strengthening or weakening the effect of firm size on profitability.

4. CONCLUSION

This study analyzes the effect of Carbon Emission Disclosure, Corporate Social Responsibility, and firm size on the profitability of manufacturing companies listed on the Indonesia Stock Exchange during the 2022-2024 period, with leverage as a moderating variable. The results indicate that Carbon Emission Disclosure and Corporate Social Responsibility have a positive and significant effect on profitability, while firm size has no significant effect. Furthermore, leverage does not moderate the relationship between Carbon Emission Disclosure and firm size on profitability; however, leverage weakens the relationship between Corporate Social Responsibility and profitability, indicating that high debt levels reduce a firm's ability to fully realize the economic benefits of CSR activities. These findings highlight the importance of sustainability disclosure while emphasizing the role of financial structure in shaping corporate performance. Future research is encouraged to incorporate additional variables and longer observation periods to improve explanatory power and provide more comprehensive insights.

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REFERENCES

- Alipour, M., Ghanbari, M., Jamshidinavid, B., & Taherabadi, A. (2022). Carbon disclosure, environmental performance, and firm value: Evidence from emerging markets. *Journal of Cleaner Production*, 344, 131012. <https://doi.org/10.1016/j.jclepro.2022.131012>
- Brigham, E. F., & Houston, J. F. (2020). *Fundamentals of Financial Management* (15th ed.). Cengage Learning.

- Buallay, A., Kukreja, G., Aldhaen, E., Al Mubarak, M., & Hamdan, A. (2021). Corporate social responsibility disclosure and firm performance in emerging markets. *Sustainability*, *13*(3), 1150. <https://doi.org/10.3390/su13031150>
- Chariri, A., & Nugroho, F. A. (2022). Carbon emission disclosure and financial performance: Evidence from Indonesian manufacturing firms. *Sustainability Accounting, Management and Policy Journal*, *13*(4), 1013-1035. <https://doi.org/10.1108/SAMPJ-03-2021-0097>
- D'Amico, E., Coluccia, D., Fontana, S., & Solimene, S. (2021). Factors influencing corporate environmental disclosure. *Business Strategy and the Environment*, *30*(1), 68-89. <https://doi.org/10.1002/bse.2610>
- Deegan, C. (2020). *Financial Accounting Theory* (5th ed.). McGraw-Hill Education.
- Exchange, I. S. (2023). *IDX Fact Book 2023*. IDX.
- Gerged, A. M., Cowton, C. J., & Beddewela, E. (2021). Towards Sustainable Development in the Arab Middle East and North Africa Region: A Longitudinal Analysis of Carbon Disclosure and Firm Performance. *Business Strategy and the Environment*, *30*(1), 14-33. <https://doi.org/10.1002/bse.2600>
- Ghozali, I. (2021). *Aplikasi analisis multivariate dengan program IBM SPSS 26*. Badan Penerbit Universitas Diponegoro.
- Kasmir. (2021). *Analisis laporan keuangan* (Revisi). RajaGrafindo Persada.
- Li, Z., Chen, Y., & Luo, J. (2023). Leverage, corporate social responsibility, and firm performance. *Sustainability*, *15*(4), 3451. <https://doi.org/10.3390/su15043451>
- Liu, X., Yang, Y., & Tian, G. (2021). Carbon disclosure, environmental performance, and cost of capital. *Business Strategy and the Environment*, *30*(6), 2829-2847. <https://doi.org/10.1002/bse.2789>
- Luo, L., Tang, Q., & Lan, Y. C. (2021). Comparison of propensity for carbon disclosure between developing and developed countries. *Accounting Research Journal*, *32*(2), 226-246. <https://doi.org/10.1108/ARJ-01-2017-0024>
- Myers, S. C. (2021). Capital structure. *Journal of Economic Perspectives*, *15*(2), 81-102. <https://doi.org/10.1257/jep.15.2.81>
- Plumlee, M., Brown, D., Hayes, R. M., & Marshall, R. S. (2021). Voluntary environmental disclosure and firm value: The role of signaling. *The Accounting Review*, *96*(3), 323-348. <https://doi.org/10.2308/TAR-2019-0502>
- Saka, C., & Oshika, T. (2020). Disclosure effects, carbon emissions and corporate value. *Sustainability Accounting, Management and Policy Journal*, *5*(1), 22-45. <https://doi.org/10.1108/SAMPJ-09-2012-0030>
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, *87*(3), 355-374. <https://doi.org/10.2307/1882010>
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, *20*(3), 571-610.
- Sugiyono. (2021). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Sutrisno. (2021). *Manajemen keuangan teori, konsep, dan aplikasi*. Ekonisia.
- Widyawati, L., & Pramita, Y. (2022). Leverage, corporate social responsibility, and firm performance: Evidence from Indonesian manufacturing firms. *Jurnal Akuntansi Dan Keuangan*, *24*(2), 85-98.
- Zhang, J., & Liu, C. (2021). Carbon emission disclosure and firm performance in emerging economies. *Environmental Science and Pollution Research*, *28*(36), 50645-50659. <https://doi.org/10.1007/s11356-021-14289-7>
- Zhao, X., Murrell, A. J., & Wang, Y. (2022). Corporate social responsibility, capital structure, and firm performance. *Corporate Social Responsibility and Environmental Management*, *29*(1), 1-15. <https://doi.org/10.1002/csr.2189>