"The role of environmental performance in mediating the relationship between green accounting and corporate social responsibility"

AUTHORS	Dwi Ratmono (iD) Rasid Mail Nur Cahyonowati (iD) Dyah N. A. Janie (iD)

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
46	1	5

BUSINESS PERSPECTIVES

businessperspectives.org

BUSINESS PERSPECTIVES

Dwi Ratmono, Doctor in Accounting, Associate Professor, Department of Accounting, Universitas Diponegoro [Diponegoro University], Indonesia. (Corresponding author)

Rasid Mail, Doctor in Accounting, Professor, Faculty of Business, Economics and Accountancy, Universiti Malaysia Sabah [University of Malaysia Sabah], Malaysia.

Nur Cahyonowati, Doctor in Accounting, Associate Professor, Department of Accounting, Universitas Diponegoro [Diponegoro University], Indonesia.

Dyah N. A. Janie, Doctor in Accounting, Assistant Professor, Department of Accounting, Universitas Muhammadiyah Semarang [Muhammadiyah University of Semarang], Indonesia.

Dwi Ratmono (Indonesia), **Rasid Mail** (Malaysia), **Nur Cahyonowati** (Indonesia), **Dyah N. A. Janie** (Indonesia)

THE ROLE OF ENVIRONMENTAL PERFORMANCE IN MEDIATING THE RELATIONSHIP BETWEEN GREEN ACCOUNTING AND CORPORATE SOCIAL RESPONSIBILITY

Abstract

The problems of pollution, global warming, and environmental damage are currently relevant and vital challenges for corporations, governments, and society. The implementation of green accounting is one of the responses of corporations to overcome sustainability issues. This study aims to examine the impact of green accounting on the level of environmental performance and the impact of environmental performance on corporate social responsibility (CSR) disclosure. This study also tests the role of environmental performance as a mediating variable in the relationship between green accounting and CSR disclosure. The sample consists of 95 listed Indonesian firms during the period 2017–2021. The results show that the adoption of green accounting positively affects environmental performance (coefficient is 0.291 and p-value < 0.01). Meanwhile, environmental performance positively affects CSR disclosure with a coefficient of 0.296 and a p-value < 0.01. The empirical evidence also shows that environmental performance has a critical role as a mediating variable in the effect of green accounting on CSR disclosure.

Keywords	green accounting, environmental performance, corporate social responsibility, sustainability, legitimacy
JEL Classification	Q56, M41, M48

INTRODUCTION

Currently, the world is facing pollution, global warming, environmental damage, and mismanagement of natural resources; this has given rise to sustainability issues. The exploitation of natural resources and the environment is increasingly worrying as it is causing various kinds of environmental damage and disasters that threaten the lives of every living creature. Company management worldwide is expected to support sustainable development goals to overcome these environmental problems. Companies must adopt business strategies that can meet their needs while preserving the resources future generations may need. The responsibility of company management to manage sustainability issues has encouraged the development of green or environmental accounting.

When the industrial revolution, especially manufacturing, had a negative impact on the environment, the role of green accounting in reducing climate change became very important. Therefore, the role of green accounting in reducing climate change became critical. Its implementation is expected to result in better environmental manage-

ment. Even though extensive literature and empirical studies support green accounting, the preparation of accounting standards is still in progress. Thus, policymakers, shareholders, non-governmental organizations, and other stakeholders still debate the benefits of adopting green accounting.

Many companies have implemented green accounting; however, it is necessary to estimate its effectiveness. Studies that analyze the role of green accounting in supporting sustainable development are still limited. In addition, there need to be more studies focusing on Indonesia, a developing country, as prior research has generally analyzed green accounting practices in developed countries. Environmental damage significantly affects developing countries due to the large use of non-renewable energy. Finally, there is a need to analyze the mechanism or process of the positive effects of green accounting on environmental performance and disclosure. Such an analysis can contribute to filling the research gap.

1. LITERATURE REVIEW AND HYPOTHESES

This study uses the legitimacy theory and signaling theory to develop the research model. The legitimacy theory is generally used to support research on accounting concerning environmental and social issues. According to Brown and Deegan (1998), the legitimacy theory explains that a company or organization strives to ensure that operations are in accordance with ethics, rules, and culture found in society.

Based on the legitimacy theory, companies disclose their environmental management to fulfill the social contract (Deegan, 2022; Burlea & Popa, 2013). Through the legitimacy theory, a company's involvement in green accounting can be associated with better reporting of revenue figures. This can influence public perceptions so they are favorable toward the company's image (Caldera et al., 2018; Phan et al., 2020; Khan & Gupta, 2023a; Adegbie et al., 2020).

Green accounting is a field that measures and presents environmental management costs. Information about environmental costs is used for managerial decision-making and disclosure to stakeholders. The adoption of green accounting aims to identify, measure, and disclosure environmental costs and liabilities (Khan & Gupta, 2023a; Adegbie et al., 2020; Bebbington et al., 2021; Chavez & Romi, 2021; Cho et al., 2022; Gunarathne et al., 2021; Thomson, 2021). Green accounting is a company tool that provides an understanding of environmental management activities from an economic perspective (Maama & Appiah, 2019). The information produced by

the green accounting system relates to environmental management, ranging from information regarding production activities, analysis activities, and the use of renewable energy (Latan et al., 2018; Rounaghi, 2019). This information aims to establish a good relationship between financial performance and the environment because the company uses this information to support its activities and reduce costs and risks expected to add value (Maama & Gani, 2022). Green accounting as a management tool can reduce and even eliminate many costs; this can happen through the right decisions and by investing in environmentally friendly technology, for example, in collecting digital data, thereby reducing the use of paper. Costs that affect the environment need to be identified precisely according to the company's actual environmental conditions so that the information presented is correct because this information can influence company decision-making. These include environmental costs related to the discovery, detection, repair, and prevention of environmental degradation (Khan & Gupta, 2023a).

Conventional accounting has limitations in responding to sustainability issues, specifically because it does not fully consider expenditures on pollution prevention (Rounaghi, 2019). Meanwhile, green accounting has the advantage of supporting sustainability by recognizing and measuring expenditures on pollution prevention and the environmental impact of company activities (Tu & Huang, 2015). Companies are currently implementing green accounting that complements conventional accounting to promote triple bottom line reporting (Cho et al., 2020; Khan & Gupta, 2023b; Nyahuna & Swanepoel,

2022). The adoption of green accounting is expected to improve a company's reputation with its stakeholders (Solovida & Latan, 2017; Nazari et al., 2017; Khan & Gupta, 2023a; Deb et al., 2023). Agyemang et al. (2024) provide empirical evidence that green accounting disclosure and environmental performance have a positive and significant relationship. In this case, green accounting disclosure provides information related to environmental economics in a disciplined manner so that it can produce a high score for environmental performance. Wahyuni et al. (2019) discovered that green accounting positively affects environmental performance.

Implementing environmental accounting for companies in developing countries is required because of increasing carbon emissions. This increase has contributed to global warming (IPCC, 2023; Atashov et al., 2023). Indonesia has committed to overcome climate change by ratifying the Paris Agreement with Law No.16 of 2017. Through this commitment, Indonesia and other countries are jointly committed to keeping the rise in global temperatures to below 2°C and making efforts to limit global temperatures from rising a further 1.5° above pre-industrial levels. These regulations indicate that it is critical to mitigate carbon emissions to achieve zero emissions.

Although carbon measurement and disclosure are not mandatory and generally unregulated, many organizations disclose information about their initiatives and actions voluntarily and adopt green accounting (Borghei, 2021). Accounting for measuring and disclosing carbon emissions in Indonesia is still voluntary because there is no obligation for companies; nevertheless, with pressure from society to be more responsive to climate change issues, companies are now starting to implement it. However, the implementation of green accounting – including recording carbon emissions – also has negative implications for companies, including increasing their operating costs (Nursulistyo et al., 2022).

The signal theory explains that the information conveyed, including information related to environmental impact management, could be an indicator and signal regarding the actual situation and company prospects (Mavlanova et al.,

2012). When a competent authority assesses environmental management performance, it will encourage different levels of corporate social responsibility (CSR) disclosure. The literature shows empirical evidence of a positive relationship between environmental performance and CSR disclosure (Guthrie & Parker, 1990; Ching et al., 2014; Khan & Gupta, 2023a).

Burhany (2011), Al-Tuwaijri et al. (2004), Kraus et al. (2020), and Jati et al. (2023) showed a positive relationship between CSR disclosure and environmental performance. Investors favor good news that contains information about reducing environmental risks and costs resulting from environmental performance. Empirical evidence supports the signal theory, which posits that an activity and information about an entity can be an indicator or signal regarding the state, quality, or prospects of that entity (Mavlanova et al., 2012; Qiu et al., 2016). According to the legitimacy theory, companies will try to provide information about environmental performance to convey positive signals to investors that those companies are behaving as good entities and doing their best in matters related to environmental conservation (Jaggi et al., 2018). Managers try to project a positive image in order to be perceived well by shareholders and stakeholders to ensure optimal company performance. Disclosure about an entity's environmental awareness activities, such as in sustainability reporting, is one means of gaining legitimacy (Ananzeh et al., 2023; Deb et al., 2023). The company will try to convey information regarding its activities related to environmental issues to provide a positive signal to gain a good reputation (Altarawneh, 2023).

This study aims to analyze the relationship among green accounting, environmental performance, and CSR disclosure. The hypotheses in this study are as follows:

H1: Adoption of green accounting has a positive effect on environmental performance.

H2: Environmental performance has a positive effect on CSR disclosure.

H3: Environmental performance mediates the effect of green accounting on CSR disclosure.

2. METHOD

The population comprises mining, energy, and manufacturing companies listed on the Indonesia Stock Exchange (IDX) and participating in the environmental performance assessment program from the Ministry of Environment during the 2017–2021 period. The purposive sampling method was used with the following criteria:

1. Mining, energy, and manufacturing companies listed on IDX for the 2017–2021 period;

2. The company publishes annual reports and sustainability reports for the 2017–2021 period that can be accessed directly via the company website; and

3. It participated in the PROPER program during the 2017–2021 period.

Companies from the mining, energy, and manufacturing industries were chosen for this sample because their production activities have a direct impact on the environment. Based on the determined criteria, 95 firm-years were used in this study's data analysis.

The independent variable is the adoption of green accounting by the companies in the sample, which is measured using three indicators: the use of recycled materials, environmental cost allocation, and renewable energy. The mediating variable is environmental performance measured using the company's achievements in the program as assessed by the Ministry of the Environment. The dependent variable is CSR disclosure measured using the GRI index. This study uses PLS-SEM with WarpPLS 8.0 software for hypotheses testing.

3. RESULTS AND DISCUSSION

Table 1 presents descriptive statistics. The adoption of green accounting is measured by three indicators or proxies: use of recycled materials, environmental costs, and renewable energy. The average use of recycled materials is 894,736.81, with significant variations among the sample companies as indicated by the minimum, maximum, and standard deviation values. Likewise, the environmental costs and renewable energy indicators also show quite large variations in their data. Environmental performance shows an average of 3.14 with a standard deviation of 0.56. This descriptive statistic shows the environmental performance of the sample companies on good criteria because this variable is measured on a scale of 1-5 as used in the PROPER assessment (1 = very bad, 5 = very good). The average CSR disclosure in Table 1 is 41.11%, which shows that disclosure is still low based on GRI criteria.

This study uses the PLS-SEM method for hypotheses testing because there is a latent variable, namely the adoption of green accounting. The PLS-SEM was conducted in two steps: measurement/outer and structural/inner models (Hair et al., 2022). The measurement/outer model testing was utilized to examine the green accounting variable. The formative variable/construct is relevant if the indicator coefficient is significant and there is no multicollinearity (Hair et al., 2022; Kock, 2021). The green accounting variable in this study uses three formative measurement indicators: the use of recycled materials, environmental costs, and renewable energy. Table 2 shows that the measurement model of the green accounting variable is supported, with a significant coefficient or weight value for these three indicators; in addition, there is no multicollinearity. Likewise, the environmental performance and CSR variable indicators also meet the criteria for a formative measurement model.

Table 1. Descriptive statistics

Variables	Minimum	Maximum	Mean	Standard Deviation
RM	0.20	26,475,597.00	894,736.81	3,460,403.44
EC	7,293,000.00	392,360,760,000.00	31,468,617,287.00	64,765,372,573.00
RE	0.00	20,281,474.00	433,061.69	2,530,584.83
EP	2.40	5.00	3.41	0.56
CSR	10.39%	79.22%	41.11%	17.19%

Note: RM = Use of Recycled Materials; *EC* = Environmental Costs; *RE* = Renewable Energy; *EP* = Environmental Performance; *CSR* = CSR Disclosure.

Table 2. Measurement model evaluation

Indicators	Parameter	Result	Rule of thumb	Conclusion
RM	Significant weight	P-values < 0.001	P-values < 0.01 (level = 1%)	Accepted
	VIF	1.065	VIF < 5	Accepted
EC	Significant weight	P-values < 0.001	P-values < 0.01 (level = 1%)	Accepted
	VIF	1.175	VIF < 5	Accepted
RE	Significant weight	P-values < 0.001	P-values < 0.01 (level = 1%)	Accepted
	VIF	1.212	VIF < 5	Accepted
EP	Significant weight	P-values < 0.001	P-values < 0.01 (level = 1%)	Accepted
	VIF	0.000	VIF < 5	Accepted
CSR	Significant weight	P-values < 0.001	P-values < 0.01 (level = 1%)	Accepted
	VIF	0.000	VIF < 5	Accepted

Note: RM = Use of Recycled Materials; *EC* = Environmental Costs; *RE* = Renewable Energy; *EP* = Environmental Performance; *CSR* = CSR Disclosure.

Table 3. Model fit indices

Criteria	Result	P-Values	Rule of thumb
Average Path Coefficient (APC)	0.228	0.005	P < 0.05
Average R-Square (ARS)	0.099	0.041	P < 0.05
Average Block VIF (AVIF)	1.098	–	≤ 3.3
Average Full Collinearity VIF (AFVIF)	1.040	–	≤ 3.3
Tenenhaus GoF (GoF)	0.288	–	≥ 0.25
Sympson's paradox ratio	1.000	–	≥ 0.70
R-squared contribution ratio	1.000	–	≥ 0.90
Statistical suppression ratio	1.000	–	≥ 0.90
Nonlinear bivariate causality direction ratio	0.833	–	≥ 0.70

After the measurement model testing stage is complete, the next stage is testing the structural model. The inner or structural model was examined by several model fit indices. Table 3 shows that the inner model has a good fit.

Once the goodness of fit evaluation has met the criteria, hypotheses testing is carried out using PLS-SEM to evaluate the path coefficient and its significance. Figure 1 presents the results of the structural model.

The PLS-SEM test results in Figure 1 show that the adoption of green accounting has a significant positive effect on environmental performance (β = 0.291, p-value < 0.01). Thus, environmental performance significantly and positively affects CSR disclosure (β = 0.296, p-value < 0.01). Meanwhile, the direct effect of green accounting adoption on CSR disclosure is not significant, with a p-value of 0.17. These results indicate that the environmental performance variable has a mediating role in the relationship between green accounting adoption
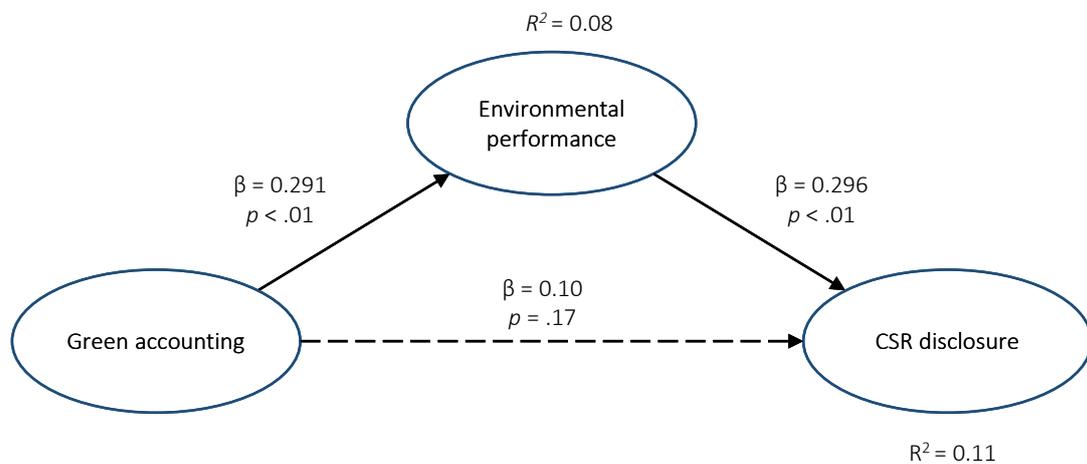

Figure 1. PLS-SEM analysis

Table 4. Path coefficients and p-values

Path	Expected Sign	Path coefficients	Conclusion
Green accounting → Environmental performance	(+)	0.291***	H1 is supported
Environmental performance → CSR disclosure	(+)	0.296***	H2 is supported

Note: *significant at alpha 10%, ** significant at alpha 5%, *** significant at alpha 1%.

and CSR disclosure. Based on the PLS-SEM estimation results, the results of hypotheses testing can be summarized as presented in Table 4.

The PLS-SEM test results presented in Table 4 show that the adoption of green accounting positively influences environmental performance with a path coefficient of 0.291 and significant at alpha 1%. Therefore, empirical evidence supports *H1*, which states that the adoption of green accounting has a positive effect on environmental performance. Likewise, the study supports *H2*, which states that environmental performance has a positive effect on CSR disclosure. This is indicated by a path coefficient of 0.296 and is significant at an alpha of 1%.

The next stage is testing *H3,* which analyzes the mediation variable of environmental performance in the relationship between green accounting adoption and CSR disclosure. Mediation testing is carried out using procedures developed by Hair et al. (2022). The results of the mediation hypothesis testing are presented in Table 5.

According to this procedure, the mediation analysis is based on the results of standardized path coefficient (direct and indirect effect) significance testing with the PLS-SEM bootstrapping procedure (Nitzl et al., 2016; Hair et al., 2022). Table 5 shows that the indirect effect of green accounting adoption on CSR disclosure through environmental performance is significant, with an indirect effect path coefficient of 0.086 and a *p*-value of 0.017. These results support *H3*. The PLS-SEM test results presented in Table 5 show that the di-

rect effect of green accounting on CSR disclosure is not significant, with a path coefficient of 0.096 and a *p*-value of 0.169. These results indicate that the mediating variable of environmental performance fully mediates the relationship between green accounting adoption and CSR disclosure (Zhao et al., 2010; Nitzl et al., 2016; Hair et al., 2022; Kock, 2021). Adoption of green accounting can only increase CSR disclosure if it can improve environmental performance.

The results show that the adoption of green accounting positively affects the level of environmental performance. The better the implementation of green accounting, the more environmental performance can be improved as assessed by the government. The results of the first hypothesis support the legitimacy theory. Adopting green accounting is one of the company's means of supporting sustainable development. These findings may improve management strategies in managing waste, recycling materials, reducing environmental costs, and using renewable energy (Khan & Gupta, 2023a). The empirical evidence supports Solovida and Latan (2017), Rounaghi (2019), Wahyuni et al. (2019), and Agyemang et al. (2024), who demonstrated that green accounting positively affects environmental performance.

Environmental performance positively affects CSR disclosure, which is proxied using the GRI Index. The higher the company's ranking in environmental performance, the greater the company's tendency to disclose relevant data. On the other hand, a decrease in environmental performance is followed by a decrease in the company's

Table 5. Mediation effect test

Structural/hypothesized paths	Coefficient	*p*-value	Conclusion
Panel A: Indirect effect			
Green accounting → Environmental performance → CSR disclosure	0.086	0.017	H3 is supported
Panel B: Direct effect			
Green accounting → CSR disclosure	0.096	0.169	Full mediation

CSR disclosure. The empirical evidence yielded by this study supports the signal theory that actions and information conveyed by the company can be an indicator and signal regarding real conditions and prospects (Mavlanova et al., 2012). These findings support Jati et al. (2023), Deegan (2002), Gray (2010), and Rounaghi (2019).

The environmental performance variable acts as a mediating variable in the model. Adoption of green accounting does not necessarily increase CSR disclosure directly but must happen due to improved environmental performance. This empirical evidence supports Renaldo et al. (2022) and Khan and Gupta (2023a).

CONCLUSION

The objective of this paper was to analyze the impact of green accounting on the level of environmental performance and the effect of environmental performance on CSR disclosure. The result shows that environmental accounting positively affects environmental performance, which in turn increases CSR. These findings imply that companies should implement green or environmental accounting to support sustainable development goals. Green accounting has advantages over conventional accounting, as it takes into account the pollution cost and the effect of company operations on the environment. In addition, green accounting measures and records the costs of depletion of natural resources and changes in environmental quality. This study also has implications for the government's role in ranking environmental performance and encouraging the adoption of green accounting in order to increase CSR disclosure.

This study has several limitations, including how it measures green accounting adoption by using just the three proxies: the recycling of material, environmental costs, and renewable energy. These three proxies are the best for measuring green accounting research using quantitative methods; however, they are limited in observing the implementation of green accounting adoption in detail. Future research could consider using qualitative methods to analyze green accounting practices in companies in depth. In addition, because of the sample selection process, generalizations are limited to certain industries. Future studies are expected to expand the sample and context to other countries. Future research could also consider the relationship between corporate governance and green accounting adoption.

AUTHOR CONTRIBUTIONS

Conceptualization: Dwi Ratmono, Rasid Mail.
Data curation: Nur Cahyonowati, Dwi Ratmono, Dyah N. A. Janie.
Formal analysis: Dwi Ratmono, Rasid Mail.
Investigation: Dwi Ratmono, Nur Cahyonowati.
Methodology: Dwi Ratmono, Rasid Mail.
Project administration: Dyah N. A. Janie, Dwi Ratmono.
Software: Dwi Ratmono, Nur Cahyonowati, Dyah N. A. Janie.
Supervision: Dwi Ratmono, Rasid Mail.
Validation: Rasid Mail, Dwi Ratmono.
Writing – original draft: Dwi Ratmono, Nur Cahyonowati, Dyah N. A. Janie.
Writing – review & editing: Dwi Ratmono, Rasid Mail.

REFERENCES

1. Adegbie, F. F., Ogidan, A., Siyanbola, T., & Adebayo, A. S. (2020). Environmental accounting practices and share value of food and beverages manufacturing companies quoted in Nigeria. *Journal of Critical Reviews, 7*(13), 2256-2264. Retrieved from https://www.jcreview.com/admin/Uploads/Files/622de229b32fb0.13486575.pdf

2. Agyemang, A., Yusheng, K., Twum, K., Edziah, B. K., & Ayamba, E. C. (2024). Environmental accounting and performance: Empirical evidence from China. *Environment Development and Sustainability, 26*, 3687-3712. https://doi.org/10.1007/s10668-022-02853-y

3. Altarawneh, M. S. (2023). The impact of environmental disclosure on value relevance: Moderating role of environmental performance. *Environmental Economics, 14*(2), 69-86. https://doi.org/10.21511/ee.14(2).2023.06

4. Al-Tuwaijri, S. A., Christensen, T. E., & Hughes. K. (2004). The relations among environmental disclosure, environmental performance, and economic performance: A simultaneous equations approach. *Accounting Organizations and Society, 29*(5-6), 447-471. https://doi.org/10.1016/S0361-3682(03)00032-1

5. Ananzeh, H., Bugshan, A., & Amayreh, I. (2023). Does media exposure moderate the relationship between ownership structure and environmental disclosure quality: Evidence from Jordan. *Management of Environmental Quality: An International Journal, 34*(1), 59-79. https://doi.org/10.1108/MEQ-12-2021-0293

6. Atashov, B., Mammadova, E., & Ibrahimov, E. (2023). Promotion of green economic growth in post-Soviet countries: Role of foreign direct and portfolio investments. *Problems and Perspectives in Management, 21*(4), 288-303. https://doi.org/10.21511/ppm.21(4).2023.23

7. Bebbington, J., Larrinaga, C., O'Dwyer, B., & Thomson, I. (2021). *Routledge handbook of environmental accounting*. London: Routledge.

8. Borghei, Z. (2021). Carbon disclosure: A systematic literature review. *Accounting & Finance, 61*(4), 5255-5280. https://doi.org/10.1111/acfi.12757

9. Brown, N., & Deegan, C. (1998). The public disclosure of environmental performance information – A dual test of media agenda setting theory and legitimacy theory. *Accounting and Business Research, 29*(1), 21-41. https://doi.org/10.1080/00014788.1998.9729564

10. Burhany, D. (2011). Pengaruh implementasi akuntansi lingkungan terhadap kinerja lingkungan dan pengungkapan informasi lingkungan serta dampaknya terhadap kinerja keuangan perusahaan [Effect of implementation of environmental accounting on environmental performance and disclosure of environmental information and its impact on the company's financial performance]. *Indonesian Journal of Economics and Business, 1*(2). (In Indonesian). Retrieved from https://jurnal.unpad.ac.id/ijeb/article/view/2673

11. Burlea, A. S., & Popa, I. (2013). Legitimacy theory. In S. O. Idowu, N. Capaldi, L. Zu, & A. D. Gupta (Eds.), *Encyclopedia of Corporate Social Responsibility* (pp. 1579-1584). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-28036-8_471

12. Caldera, S., Desha, C., & Dawes, L. (2018). Exploring the characteristics of sustainable business practice in small and medium-sized enterprises: Experiences from the Australian manufacturing industry. *Journal of Cleaner Production, 177*, 338-349. https://doi.org/10.1016/j.jclepro.2017.12.265

13. Chavez, S. L., & Romi, A. M. (2021). The North American environmental accounting research landscape. In J. Bebbington, C. Larrinaga, B. O'Dwyer, & I. Thomson (Eds.), *Routledge handbook of environmental accounting* (pp. 315-327). London: Routledge. https://doi.org/10.4324/9780367152369-27

14. Ching, H. Y., Gerab, F., & Toste, T. H. (2014). Scoring sustainability reports using GRI indicators: A study based on ISE and FTS-E4Good Price indexes. *Journal of Management Research, 6*(3), 29-48. https://doi.org/10.5296/jmr.v6i3.5333

15. Cho, C. H., Jerôme, T., & Maurice, J. (2022). Assessing the impact of environmental accounting research: Evidence from citation and journal data. *Sustainability Accounting, Management and Policy Journal, 13*(5), 989-1014. https://doi.org/10.1108/SAMPJ-09-2021-0384

16. Deb, B. C., Rahman, M. M., & Rahman, M. S. (2023). The impact of environmental management accounting on environmental and financial performance: Empirical evidence from Bangladesh. *Journal of Accounting & Organizational Change, 19*(3), 420-446. https://doi.org/10.1108/JAOC-11-2021-0157

17. Deegan, C. (2002). Introduction: The legitimising effect of social and environmental disclosures – A theoretical foundation. *Accounting, Auditing & Accountability Journal, 15*(3), 282-311. https://doi.org/10.1108/09513570210435852

18. Gray, R. (2010). A Re-Evaluation of Social, Environmental and Sustainability Accouning: An Exploration of an Emerging Trans-Disciplinary Field? *Sustainability Accounting, Management and Policy Journal, 1*(1), 11-32. https://doi.org/10.1108/20408021011059205

19. Gunarathne, A. N., Lee, K. H., & Kaluarachchilage, P. K. H. (2021). Institutional pressures, environmental management strategy, and organizational performance: The role of environmental management accounting. *Business Strategy and the Environment, 30*(2), 825-839. https://doi.org/10.1002/bse.2656

20. Guthrie, J., & Parker, L. D. (1990). Corporate social disclosure practice: A comparative international analysis. *Advances in Public Interest Accounting, 3,* 159-175. Retrieved from https://researchers.mq.edu.au/en/publications/corporate-social-disclosure-practice-a-comparative-international--2

21. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least square structural equation modeling (PLS-SEM).* California: SAGE Publication, Inc.

22. IPCC. (2023). *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds.)]. Geneva, Switzerland. Retrieved from https://www.ipcc.ch/report/ar6/syr/

23. Jaggi, B., Allini, A., Macchioni, R., & Zagaria, J. (2018). The factors motivating voluntary disclosure of carbon information: Evidence based on Italian listed companies. *Organization & Environment, 31*(2), 178-202. https://doi.org/10.1177/1086026617705282

24. Jati, K. W., Agustina, L., Deviani, Ulupui, I. G., & Respati, D. K. (2023). The effect of environmental performance on sustainability reporting: A case of Indonesia. *Environmental Economics, 14*(1), 36-46. https://doi.org/10.21511/ee.14(1).2023.04

25. Khan, S., & Gupta, S. (2023a). The interplay of sustainability, corporate green accounting and firm financial performance: A meta-analytical investigation. *Sustainability Accounting, Management and Policy Journal.* https://doi.org/10.1108/SAMPJ-01-2022-0016

26. Khan, S., & Gupta, S. (2023b). Using a hermeneutic phenomenological approach to Twitter content: A social network's analysis of green accounting as a dimension of sustainability. *Qualitative Research in Financial Markets, 15*(4), 672-692. https://doi.org/10.1108/QRFM-02-2022-0031

27. Kock, N. (2021). *WarpPLS: User Manual. Version 7.0.* Laredo, TX: ScriptWarp Systems. Retrieved from https://www.scriptwarp.com/warppls/UserManual_v_7_0.pdf

28. Kraus, S., Rehman, S. U., & García, F. J. S. (2020). Corporate social responsibility and environmental performance: The mediating role of environmental strategy and green innovation. *Technological Forecasting and Social Change, 160,* 120262. https://doi.org/10.1016/j.techfore.2020.120262

29. Latan, H., Jabbour, C. J. C., Lopes de Sousa Jabbour, A. B., Wamba, S. F., & Shahbaz, M. (2018). Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance: The role of environmental management accounting. *Journal of Cleaner Production, 180,* 297-306. https://doi.org/10.1016/j.jclepro.2018.01.106

30. Maama, H., & Appiah, K. O. (2019). Green accounting practices: Lesson from an emerging economy. *Qualitative Research in Financial Markets, 11*(4), 456-478. https://doi.org/10.1108/QRFM-02-2017-0013

31. Maama, H., & Gani, S. (2022). Carbon accounting, management quality, and bank performance in East Africa. *Environmental Economics, 13*(1), 114-125. https://doi.org/10.21511/ee.13(1).2022.10

32. Mavlanova, T., Benbunan-Fich, R., & Koufaris, M. (2012). Signaling theory and information asymmetry in online commerce. *Information & Management, 49*(5), 240-247. https://doi.org/10.1016/j.im.2012.05.004

33. Nazari, J. A., Hrazdil, K., & Mahmoudian, F. (2017). Assessing social and environmental performance through narrative complexity in CSR reports. *Journal of Contemporary Accounting & Economics, 13*(2), 166-178. https://doi.org/10.1016/j.jcae.2017.05.002

34. Nitzl., C., Roldon, J., & Cepeda, G. (2016). Mediation analysis in partial least squares path modeling: Helping researchers discuss more sophisticated models. *Industrial Management & Data Systems, 116*(9), 1849-1864. https://doi.org/10.1108/IMDS-07-2015-0302

35. Nursulistyo, E. D., Aryani, Y. A., & Bandi, B. (2022). The disclosure of carbon emission in Indonesia: A systematic literature review. *Jurnal Dinamika Akuntansi Dan Bisnis, 10*(1), 1-18. https://doi.org/10.24815/jdab.v10i1.27974

36. Nyahuna, T., & Doorasamy, M. (2021). Application of environmental management accounting by small and medium enterprises in South Africa. *Environmental Economics, 12*(1), 103-111. https://doi.org/10.21511/ee.12(1).2021.09

37. Nyahuna, T., & Swanepoel, M. (2022). Influence of environmental management accounting practices on the environmental sustainability of South African cement and mining companies. *Environmental Economics, 13*(1), 101-113. https://doi.org/10.21511/ee.13(1).2022.09

38. Phan, T. T. H., Tran, H. X., Le, T. T., Nguyen, N., Pervan, S., & Tran, M. D. (2020). The relationship between sustainable development practices and financial performance: A case study of textile firms in Vietnam. *Sustainability, 12*(15), 5930. https://doi.org/10.3390/su12155930

39. Qiu, Y., Shaukat, A., & Tharyan, R. (2016). Environmental and social disclosures: Link with corporate financial performance. *The British Accounting Review, 48*(1), 102-116. https://doi.org/10.1016/j.bar.2014.10.007.

40. Renaldo, N., Suhardjo, Suyono, Andi, Veronica, K., & David, R. (2022). Good corporate governance moderates the effect of environmental performance and social performance on financial performance. *International Conference on Business Management and Accounting, 1*(1), 1-9. Retrieved from https://www.ejournal.pelitaindonesia.ac.id/ojs32/index.php/icobima/article/view/2741

41. Rounaghi, M. M. (2019). Economic analysis of using green accounting and environmental accounting to identify environmental costs and sustainability indicators. *International Journal of Ethics and*

Systems, 35(4), 504-512. https://doi.org/10.1108/IJOES-03-2019-0056

42. Solovida, G. T., & Latan, H. (2017). Linking environmental strategy to environmental performance: Mediation role of environmental management accounting. *Sustainability Accounting, Management and Policy Journal, 8*(5), 595-619. https://doi.org/10.1108/SAMPJ-08-2016-0046

43. Thomson, I. (2021). Before research methods comes "methodising:" implications for environmental accounting research. In J. Bebbington, C. Larrinaga, B. O'Dwyer, & I. Thomson (Eds.), *Routledge handbook of environmental accounting* (pp. 46-64.). London: Routledge. https://doi.org/10.4324/9780367152369-5

44. Tu, J. C., & Huang, H. S. (2015). Analysis on the relationship between green accounting and green design for enterprises. *Sustainability, 7*(5), 6264-6277. https://doi.org/10.3390/su7056264

45. Wahyuni, W., Meutia, I., & Syamsurijal, S. (2019). The effect of green accounting implementation on improving the environmental performance of mining and energy companies in Indonesia. *Binus Business Review, 10*(2), 131-137. https://doi.org/10.21512/bbr.v10i2.5767

46. Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research, 37*(2), 197-206. https://doi.org/10.1086/651257