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Sustainability reporting disclosure, environmental performance, and firm value: evidence from Indonesia's intensive sector industry

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ABSTRACT

Tremendous studies have recently characterized the impact of sustainability reporting and the firm's value. Using the implication of legitimacy theory, signalling theory and efficiency market hypothesis theory, we investigate the association between sustainability reporting disclosures, environmental performance and firm value in the intensive sector industry in Indonesia. This research data was gathered from Indonesia Stock Exchange (IDX) in 2018-2020; 45 data observations were collected. The data was analyzed using fixed-effect regression. This study presents that environmental performance disclosure has a positive coefficient. But, the disclosure of sustainability reporting has a negative coefficient. However, it should be noted that the disclosure of sustainability reports does not have an impact on the value of the firm, and similarly, the firm's value is not influenced by environmental performance These results contribute to the growing literature examining the influence of sustainability reporting disclosure and environmental performance on company value.

ABSTRAK

Sejumlah besar penelitian baru-baru ini telah mengkaji dampak pelaporan keberlanjutan terhadap nilai perusahaan. Dengan menggunakan implikasi dari teori legitimasi, teori sinyal, dan teori hipotesis pasar efisien, kami meneliti hubungan antara pengungkapan laporan keberlanjutan, kinerja lingkungan, dan nilai perusahaan pada industri sektor padat di Indonesia. Data penelitian ini dikumpulkan dari Bursa Efek Indonesia (BEI) pada tahun 2018–2020; sebanyak 45 observasi data berhasil dihimpun. Data dianalisis menggunakan regresi efek tetap. Penelitian ini menunjukkan bahwa pengungkapan kinerja lingkungan memiliki koefisien positif. Namun, pengungkapan laporan keberlanjutan memiliki koefisien negatif. Meskipun demikian, perlu dicatat bahwa pengungkapan laporan keberlanjutan tidak berpengaruh terhadap nilai perusahaan, demikian pula nilai perusahaan tidak dipengaruhi oleh kinerja lingkungan. Hasil ini memberikan kontribusi terhadap literatur yang terus berkembang mengenai pengaruh pengungkapan laporan keberlanjutan dan kinerja lingkungan terhadap nilai perusahaan.

1. Introduction

Previous research investigates the relationship between sustainability disclosures and environmental performance, and whether these disclosures affect a company's value (Burke & Clark, 2016; T. T. D. Nguyen, 2020; Van Linh et al., 2022). Company value is important because it relates to investor perceptions (Jiang & Fu, 2019). Jiang & Fu (2019) explained that investors' decisions are influenced by the disclosure of financial and non-financial information regarding the company's environmental performance.

The business world is becoming more sensitive to social and environmental issues (Tzouvanas et al., 2020). Sustainability is a long-term goal of the company and is embedded in its management strategy through a performance approach that is monitored periodically across various aspects (Yusoff et al., 2019). Environmental criteria are the primary consideration for the company's energy use and how a company can destroy nature or the surrounding environment. Social criteria are the relationship between the community, company, and the parties involved. Corporate governance criteria include a company's legitimacy, social contracts, internal conditions, and corporate responsibility to stakeholders (Papoutsi & Sodhi, 2020).

In addition, environmental contamination significantly affects business activity (Saka & Oshika, 2014). Carbon emissions such as greenhouse gas (GHG) have been investigated as the primary hazard that could impact human growth in the twenty-first century (Giannarakis et al., 2017). Some studies have examined the impact of environmental pollution on business value and discovered that pollution reduces the firm's value (Bae Choi et al., 2013; Cordova et al., 2020; Saka & Oshika, 2014).

Shareholders use environmental data to asses investments and evaluate their assets to determine the company value and the business prospects of pollution control costs (Bewley & Li, 2000; Clarkson et al., 2019). As a result, investors emphasise that companies are highly recommended to disclose information about their environmental performance (Oncioiu et al., 2020). Earlier research about environmental performance's effect on a firm's value has yielded mixed results in empirical studies (Buchanan et al., 2018; Govindan et al., 2021; T. H. H. Nguyen et al., 2021; Pillai & Al-Malkawi, 2018).

Giannarakis et al.(2017) explained that environmental disclosure is a tool that can be used to carry out managerial expectations. Furthermore, the Disclosure of sustainability reports and environmental performance is essential for a company's sustainability (Giannarakis et al., 2017; Saka & Oshika, 2014; Van Linh et al., 2022) and is represented in sustainability reporting, which shows the entire value of the chain of sustainability impact (Cöster et al., 2020). Investors perceive that the company's success is seen from the company value and is reflected in the company's stock price movement and stock return (Arora & Nandkumar, 2012; Li et al., 2018).

The GICS (Global Industry Classification Standard) classified two industry types: intensive and non-intensive. This study focuses on the intensive company as this type of industrial organisation has main activities directly related to the environment. This group comprises mining, energy, materials, utilities, and transportation companies (https://www.msci.com/our-solutions/indexes/gics).

This study proposed an investigation of the disclosures of sustainability reporting and environmental performance on a company's value. This paper concentrates on Indonesia's conditions to some extent; firstly, under the regulation of POJK 51/2017, sustainability reporting for the company listed in Indonesia Stock Exchange (IDX) is mandated in reporting period 2020. Secondly, Undang-Undang No. 40 Tahun 2007 pasal 66c states that companies conducting business activities related to the environment and society must carry out and submit reports on social and environmental responsibility activities.

By implementing stakeholder theory, signal theory and efficiency market hypothesis theory, this research aims to examine Indonesia's circumstances in the disclosures of sustainability reporting and environmental performance and the consequences in the business entity value on a transition condition from voluntary to mandatory regulation. Nevertheless, the initial research needs to account for the various disclosure conditions of sustainability reporting, such as voluntary or mandated disclosure. This study fills a gap in the literature by performing an inquiry in voluntary settings and intends to contribute to voluntary conditions.

Implementing sustainability reporting for issuers in the capital market is mandatory starting in 2020. However, this research takes 2018-2020 data, so at that time, it was still a transition period for companies to disclose sustainability reporting. Based on these settings, this study is crucial for adding to the literature on the influence of sustainability reporting and environmental performance disclosure on business value. Despite the regulation from OJK about sustainability reporting disclosure, the number of business organisations publishing sustainability reporting has remained relatively low. This condition becomes crucial since the exposure impacts business organisation values. This paper aims to improve stakeholder perceptions of potential factors related to sustainability disclosures that may influence firm value.

Globally, sustainability reporting has become mainstream corporate practice. The KPMG (2022) Survey of Sustainability Reporting found that 96% of the world's 250 largest companies (G250) now publish some form of sustainability report, a rate that has remained consistently high in recent years. This global trend, however, has not been matched in Indonesia's intensive sector.

Data from the Indonesia Stock Exchange's official website shows that 279 companies are included in the intensive type. However, only 28 companies issue sustainability reporting and environmental performance, or only about 10% of the companies listed on the Indonesia Stock Exchange. The small number of sustainability report disclosure shows that the company's awareness of disclosing the sustainability report still needs to be improved. The annual report includes reporting on the company's social, environmental, and economic responsibility; a few still need to be disclosed in a separate report, namely the sustainability report. However, the company carries out the information only to the extent of lip service to comply with the stipulated rules. (Ngu & Amran, 2021) states that the sustainability report is just a corporate image in increasing the company's value on the stock exchange without any alignment of the implementation of the substance of social welfare and environmental preservation, so it cannot directly receive benefits from the disclosure of social responsibility.

Although sustainability reporting and environmental performance are conceptually related, they are not interchangeable constructs. Sustainability reporting disclosure reflects the extent to which a firm voluntarily communicates its environmental, social, and economic activities, whereas environmental performance reflects an independently assessed outcome of the firm's actual environmental management practices, verified by a third party rather than self-reported. Prior research questions whether disclosure genuinely reflects actual performance (Papoutsi & Sodhi, 2020), and firms may use disclosure strategically to manage stakeholder perception irrespective of their underlying environmental performance (Ngu & Amran, 2021). This potential decoupling between reporting and performance justifies examining sustainability reporting disclosure and environmental performance as distinct constructs in relation to firm value, rather than treating one as a proxy for the other.

The research utilised fixed effects regression, a method for estimating panel data that accounts for unchanging individual characteristics over time that may be associated with the examined variables. (Hair Jr et al., 2014). This study found that the influence of sustainability report disclosure and environmental performance on firm value needs to be substantiated. In addition, our study provides a number of contributions. Firstly, this study emphasizes the importance of the impact of sustainability disclosure and environmental performance on a firm's value in the transition condition between voluntary and mandatory disclosure. Secondly, the findings may aid in investigating investor behaviour regarding firm sustainability performance, allowing a firm's management to develop appropriate policies toward sustainability activities to attract investments and improve the company's competitiveness.

This paper is structured as follows, section 2 examines the literature and formulates our hypotheses. The methodological features are discussed in Section 3. Section 4 presents empirical results. Finally, in Section 5, we discuss the conclusion of this study.

2. Literature Review

2.1. Legitimacy Theory

The theory of legitimacy (Legitimacy theory) was first put forward by (Dowling & Pfeffer, 1975) and is a theory that focuses on communication and interaction between companies and society. Legitimacy theory requires companies to continuously operate and carry out their activities following boundaries and norms (Deegan et al., 2002). This theory explains that legitimacy benefits the company to continue (going concerned). The legitimacy of a company can be obtained because there is a match between expectations and results between the company and the community (Miras-Rodríguez et al., 2019). So that if the company carries out activities or activities related to the environment, the community will not sue. Legitimacy is like a social contract. So, some rights and obligations include and adapt to community conditions. Therefore, this legitimacy theory requires companies to carry out their activities to conform to social norms and values so that the company can continue and improve its corporate value image (Chijoke-Mgbame et al., 2020).

2.2. Signalling Theory

The signal theory was the first proposed field (Spence, 1973), which explains that a company provides signals about the company to users of company reports. The signal theory is the information signals needed by investors to consider whether investors will invest in the company. According to (Wolk et al., 2016), the signal theory explains why company management has the initiative and drive to provide information to external parties.

2.3. Efficiency Market Hypothesis Theory

The theory of market efficiency was first introduced by (Fama, 1970). An efficient market is where all stock prices traded reflect all available accounting information. Fama suggests that a market achieves "informational efficiency" when the prices at any given moment incorporate all the available information regarding future values. This efficiency arises due to competition, easy entry into the market, and low costs associated with acquiring information. (González & Jareño, 2019; Ţiţan, 2015).

2.4. The Impact of Sustainability Report Disclosure on Firm's Value

A sustainability report is a report in which a corporation acknowledges the impact of its actions on environmental, social, and economic factors (GRI, 2019). Every organisation must have a goal to raise the firm's value. If the enterprise value is high, it can benefit shareholders (Yusoff et al., 2019). The sustainability report demonstrates that the corporation is concerned with stakeholders' interests (Torelli, 2021). So, if a company produces a sustainability report, investors will be interested in the company since it is accountable to its shareholders.

Signalling theory provides further grounding for this relationship: sustainability reporting disclosure functions as a costly signal that credible firms use to differentiate themselves from firms withholding such information (Spence, 1973; Wolk et al., 2016). Empirical evidence, however, is mixed rather than uniform. Several studies report a positive relationship between sustainability reporting disclosure and firm value, including among Vietnamese listed firms (Van Linh et al., 2022), Indonesian firms recognised through sustainability reporting awards (Aksan & Gantyowati, 2020), and Indonesian firms more broadly (Made Endiana & Ayu Suryandari, 2021). In contrast, Friske et al. (2023), using a large panel of listed firms, find that voluntary sustainability reporting is initially negatively associated with firm value (Tobin's q) and only becomes positively associated over time, as investors learn to interpret sustainability information and firms learn to communicate it credibly. This suggests that in transitional disclosure regimes—where reporting is still voluntary or newly mandated, as in Indonesia during 2018-2020—the expected positive signalling effect of sustainability reporting disclosure may not yet be fully reflected in firm value.

H1: Sustainability Report disclosure positively impacts the Firm's Value.

2.5. The Impact of Environmental Performance on Firm's Value

The company is bound by a contract with the surrounding environment, so to maintain its position of legitimacy, the company must disclose social and environmental-related activities to stakeholders. Social and environmental disclosure will increase the reputation of stakeholders, which affects the company's shares and value (Deswanto & Siregar, 2018; Jain & Tripathi, 2023; Lokuwaduge & De Silva, 2022). The rating program is PROPER. According to the Ministry of Environment, PROPER is a Company Performance Rating Program in environmental management. The Ministry of Environment has created this rating program so that companies are more obedient to their corporate responsibilities to maintain environmental and social sustainability. Hence, the ecological performance measurement indicator of every company in Indonesia uses PROPER. Therefore, the relationship between environmental performance and firm value is that if the company has a high rating in environmental performance, it will get a positive acknowledgement from the community, especially shareholders who want to invest in the company.

Empirical studies using the PROPER rating as a proxy for environmental performance in the Indonesian context generally support this expectation. Utomo, Rahayu, Kaujan, and Irwandi (2020) find that environmental performance has a positive and significant effect on the firm value of Indonesian non-financial companies, while separately finding that environmental disclosure alone does not significantly affect firm value—reinforcing that performance and disclosure operate through distinct mechanisms. Similarly, Khanifah et al. (2020) show that environmental performance positively affects firm value in the Indonesian mining sector through the mediating role of firm reputation, and Harahap et al. (2018) report a positive association between PROPER-based environmental performance and firm value among Indonesian firms. These findings align with legitimacy theory: firms achieving superior, independently verified environmental performance are perceived by stakeholders as fulfilling their social contract, which is expected to be reflected favourably in firm value (Deegan et al., 2002; Miras-Rodríguez et al., 2019).

H2: Environmental Performance positively impacts the Firm's Value.

3. Research Methods

3.1. Sample and Variables

This study used the data panel consisting of cross-section and time series observations. The population of this research consists of companies listed on the IDX in mining, energy, materials, utilities, and transportation between 2018-2020, with a total of 279 companies. We selected some requirements for the sampling method. The sample criteria in this study were as follows: (1) Intensive sector companies that issued financial reports in the time between 2018 – 2020, (2) Intensive sector organizations that published sustainability reports during the research period (2018 – 2020), (3) Intensive sector companies registered in PROPER (Company Performance Rating Program in Environmental Management) in 2018 - 2020. Based on those requirements, 15 companies meet the criteria. Data on financial reports and firm value were obtained from the Indonesia Stock Exchange's official website (www.idx.co.id) and each company's published annual reports; data on sustainability reporting disclosure were obtained from each company's published sustainability reports and annual reports; and data on environmental performance were obtained from the PROPER rating published by the Ministry of Environment and Forestry of the Republic of Indonesia (Kementerian Lingkungan Hidup dan Kehutanan).

The dependent variable is the firm's size (FV), defined as the essential ability of an organization to generate profits and business risks, which determines its value (Lonkani, 2018). The investor's impression of the company determines the firm value (Aldamen et al., 2020). The corporation's share price is also related to the company's value. Specific measurements are used to analyze the firm's value, including the price-earnings ratio (PER), market-value, market-to-sales ratio, and Tobin's Q; each ratio presents applicable judgement for stakeholders to help make a relevant decision (Kamaliah, 2020). Tobin's Q is one of the ratios that can clarify different knowledge in the company's operations (Aboud & Diab, 2018). The firm's value measurement using Tobin's Q ratio showed the market value, total liabilities and total assets ((total market value + total liabilities)/total assets).

The sustainability report disclosure (SR) and environmental performance (EP) are independent variables. A sustainability report is a report in which the company discloses the impact of the organization's activities, both positive and negative effects on the environment, social, and economic aspects (GRI, 2019). The sustainability measurement follows the formulated by (Ching et al., 2014) that divided the number of company items disclosed with the total number of items stated in the *global reporting index* (GRI), which comprises 150 disclosure items. The disclosure score for each company was determined through manual content analysis of each company's published sustainability report and annual report, checking each GRI item against what was disclosed. Environmental performance is a measurable outcome of an environmental management system related to ecological control characteristics and an assessment of environmental performance determined by environmental policies, objectives, and targets (ISO 14001). The Ministry also develop the environmental performance rating program (PROPER). Environmental performance assessment is measured by the performance in the rating program as follows in Table 1.

Table 1. Environmental Performance Assessment

Colour Performance PROPER	*Passing Grade*	Score
Gold	Very Good	5
Green	Good	4
Blue	Obedient	3
Red	Not Obedient	2
Black	No Effort	1

4. Results and Discussion

4.1. Authors and Affiliations

Table 2 presents the sample selection procedure; based on the procedure at the end, there were 15 companies from intensive industry in Indonesia Stock Exchange (IDX) between 2018-2020; thus, the number of observations was 45.

Table 2. Sample selection procedure

Sample	Obs.
Initial sample (listed companies in IDX 2018-2020)	279
Less: Firms did not publish financial reports in 2018-2020	79
Less: Firms did not publish SR reports in 2018-2020	168
Less: Firms did not follow PROPER	17
Total Sample	15

Table 3 shows the descriptive statistics of the data. The table presents the mean of the firm's value as 1,389392, and which standard deviation of the firm's value is 0,771034. The standard deviation, lower than the mean, indicates that the data used in the firm's value variable indicates a low spread of data variables or no considerable gap between the lowest and highest of Tobin's Q ratio.

Table 3. Descriptive statistics

	N	Mean	Median	Maximum	Minimum	Std. Dev
Dependent variables						
Firm's Value (FV)	45	1.389392	1.203109	4.045661	0,569298	0,771034
Independent variables						
Sustainability Reporting Disclosure (SRD)	45	0.480444	0.473333	0.733333	0.286667	0.106765
Environmental Performance (EP)	45	3.466667	3.000000	5.000000	2.00000	0.625227

The mean sustainability reporting disclosure (SRD) score of 0.480444 indicates that, on average, sample companies disclosed only about 48% of the 150 GRI indicators, meaning that more than half of the applicable disclosure items were not reported. The mean environmental performance (EP) score of 3.466667 out of a maximum PROPER rating of 5 indicates that, on average, sample companies fall between the "Blue/Obedient" and "Green/Good" categories, reflecting regulatory compliance without consistently strong environmental management. Together, these statistics suggest that intensive-sector companies in this sample generally comply with minimum environmental obligations but have not yet reached high levels of either transparency or environmental performance.

In panel data analysis, a methodology is employed to address unchanging individual characteristics that may be associated with the observed independent variables. To determine the appropriate approach, we conducted the Hausman test, which compares fixed effect and random effect models. The results of the Hausman test favored the fixed effect estimation. The outcome of the fixed effect model is presented in Table 4.

Table 4. Fixed Effect Model Regression

Variable	Coefficient	Prob.
C	1.308264	0.0436
SR	-0.077813	0.9468
EP	0.034186	0.7900
R-squared	0.816155	0.816155
Adjusted R-squared	0.711101	0.711101
S.D. dependent var	0.771034	0.414425
F-statistic	7.768903	4.808951
Prob(F-statistic)	0.000002	-13.53811

Table 4. The fixed effect model regression analysis indicates that sustainable report disclosure has a negative impact on the firm's value, while environmental performance has a positive effect. However, upon examining the probability values of each variable, it is evident that all variables have probabilities above the significance level of 0.05 (∝>0.05), suggesting that none of the independent factors significantly affect the dependent variable. As a result, all the hypotheses are not supported.

4.2. Sustainability Report disclosure positively impacts the Firm's Value.

The data analysis showed that the effect of sustainability reporting disclosure on a firm's value needs to be supported. From the data displayed, the average sustainability report disclosure in intensive industrial companies was 48%. Of the 150 measurement indicators used in the GRI, companies in the intensive industrial sector in Indonesia had only revealed as much as 48%, which means that the disclosure of sustainability report indicators had yet to reach 80%. The results of this study indicate that the size of the company's sustainability report disclosure did not affect the increase in company value because most companies only focused on financial or profit factors. The company was still less concerned about environmental and social aspects, as evidenced by the disclosures made by the company, which still needed to be closer to the standards that had been set. Although the issuance of sustainability reports was in transition condition from voluntary to mandatory in Indonesia, the awareness of companies to publish sustainability reports still needed to be improved. According to survey data, out of 279 intensive companies in Indonesia, only 28 companies published sustainability reports—this critical awareness from companies to publish sustainability reports, not just publish them seriously. The government had to monitor natural-related companies to preserve the environment strictly. Due to the lack of awareness of the company, this had yet to be responded to positively by the public, especially investors. This investigation is not supporting the research from (Deswanto & Siregar, 2018; Made Endiana & Ayu Suryandari, 2021; Yusoff et al., 2019), which stated that sustainability reports positively affect a firm's value.

4.3. Environmental Performance positively impacts a Firm's Value

The data generated from the descriptive statistical analysis shows that the average company scored 3.47 out of a maximum PROPER rating of 5, placing the average intensive-sector company listed on the Indonesia Stock Exchange (IDX) between the "Blue/Obedient" and "Green/Good" categories in Table 1. This indicates that, on average, sample companies comply with environmental regulations but have not yet achieved consistently strong environmental management practices. The Ministry explained that the Assessment of Compliance Performance Rating in Environmental Management was a complementary instrument or reporting that complements other instruments. Therefore, investors responded positively to management's efforts to improve the environmental achievement of the company. Although the statistical data explained that environmental performance positively impacts a firm's value, the probability was not statistically significant; thus, the hypothesis is not supported. Previous research supports this result and argues that not all investors assess environmental performance as an investment indicator. Good environmental performance does not necessarily imply that a company can deliver advantages to investors. Therefore, the impact of environmental performance on firm market value is negligible in this sample. This result is consistent with the finding of Deswanto and Siregar (2018) that environmental disclosure similarly does not significantly affect firm market value, suggesting that investors in this setting do not significantly factor either environmental performance or disclosure into their evaluation of a company (Deswanto & Siregar, 2018). However, Fahad & Busru (2020) explained that the environment positively affects a firm's performance.

4.4. Sensitivity Test

We undertake extra research by calculating the firm's value using market value. We re-estimate the estimation using data panel regression to ensure that the primary data analysis is consistent. The market value measurement refers to (Deswanto & Siregar, 2018) research, which claims that market value is one of the firm's value metrics. The stock price is tied to the company's value. As a result, the stock price utilised in this study was based on market efficiency. Hence, the price was around when the sustainability report was released (Clarkson et al., 2019). We use the Chow, Hausman, and Langrage Multiplier Test to choose the best test. In contrast to the preliminary examination, where the fixed effect was selected as the best test, the random effect was elected as the finest test in this sensitivity test.

Table 5. Random Effect Model Regression (Sensitivity Test)

Variable	Coefficient	Prob.
C	3.361755	0.0819
SR	0.018443	0.4420
EP	-0.092013	0.8455
R-squared	0.014079	0.014079
Adjusted R-squared	-0.032870	-0.032870
S.E. of regression	1.672453	1.672453
F-statistic	0.299879	0.299879
Prob(F-statistic)	0.742481	0.742481

Table 5 illustrates that sustainability report disclosure (SR) positively influences a firm's value, while environmental performance (EP) negatively affects it. However, the p-values for both SR and EP are greater than 0.05, indicating that neither has a statistically significant impact on firm value. Consequently, it can be concluded that SR does not significantly affect firm value, and similarly, environmental performance (EP) does not influence it. These sensitivity test results are consistent with the primary findings.

5. Conclusion

This study investigated the Impact of Sustainability Report Disclosure and Environmental Performance on Company Value in mining, energy, materials, utilities, and transportation companies listed on the Indonesia Stock Exchange (IDX) in 2018 – 2020. Drawing from the presented analysis and discussion, this study concludes that there is no discernible influence of sustainability report disclosure and environmental performance on the firm's value. Therefore, the findings do not support Hypotheses 1 and 2. This study used a data panel, thus analysing data using fixed effects. This study is delimited to the 2018-2020 period, when sustainability reporting in Indonesia was transitioning from a voluntary to a mandatory regime, and to intensive-sector companies that concurrently published financial reports, sustainability reports, and PROPER ratings. This study also has limitations that should be acknowledged. First, the strict sample selection criteria reduced the sample from 279 companies to only 15 companies (45 firm-year observations), which limits the statistical power of the analysis and the generalisability of the findings to the broader population of Indonesian intensive-sector firms. Second, this study did not formally test for multicollinearity between sustainability reporting disclosure and environmental performance; given that both variables relate to a company's environmental conduct, some degree of empirical overlap cannot be ruled out, and future research should explicitly test for this using variance inflation factors or correlation diagnostics. Future research could extend the observation period beyond 2020 to capture the post-mandate period and compare voluntary versus mandatory disclosure conditions, expand the sample beyond intensive-sector companies to improve generalisability, and explicitly test the relationship between sustainability reporting disclosure and environmental performance to clarify whether and how the two constructs empirically diverge.

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