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A Slight Look Environmental Disclosure Score Trends during Covid-19 Outbreak: What's Driver the Environmental Disclosure in Indonesian Mining and Manufacturing Companies

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ABSTRACT

Amid growing environmental challenges and economic development in developing countries, companies must adopt robust environmental disclosure practices to fulfil their corporate responsibility. This study examines environmental disclosure trends from 2020 to 2022 during the COVID-19 pandemic, specifically focusing on the environmentally sensitive manufacturing and mining sectors selected through purposive sampling. A total of 40 company samples, encompassing 120 units of analysis, underwent analysis involving descriptive statistics, classical assumption tests, and multiple linear regression. The research explores the connection between various variables, such as company size, age, profitability, leverage, share ownership, and audit committee composition, and their impact on environmental disclosure practices. The findings reveal a rising trend in environmental disclosure among manufacturing and mining companies during the COVID-19 and post-pandemic period, increasing from 53.2% in 2020 to 60.8% in 2022. In 2022, the energy, industrial, and health sectors saw increased environmental disclosure, while the basic materials and cyclical consumer sectors decreased. Regression analysis shows that company size, profitability, and audit committees impact environmental disclosure, while company age, leverage, and foreign ownership have no discernible influence. This research provides valuable insights into environmental disclosure in Indonesia's manufacturing and mining sectors.

Keywords: Environmental Disclosure, Manufacturing, Mining, Company Characteristics, Corporate Governance
JEL Classifications: L5, L6, L25, Q5

1. INTRODUCTION

Economic growth in developing countries has a linear relationship with increasing environmental damage (Solikhah et al., 2020). Massive economic growth will encourage industrial activity and the development of production activities, thereby causing an increase in land conversion, environmental pollution (water, land, and air), and changes in the social life of society (Solikhah et al., 2020). Emission production by developing countries and emerging economy countries throughout 2022 will grow even greater than other countries, increasing by 4.2% or 206 Mt CO_2, dominated by contributions from industry and coal-fired power plants (Agency, 2023). This shows that developing countries' efforts towards massive economic growth must differ from their contribution to environmental problems.

Indonesia is one of the emerging economies and developing countries, including those facing conditions of environmental damage. Indonesia's poor environmental conditions can be seen from the Environmental Performance Index (EPI) ranking, which occupies 164th out of 180 countries. Apart from that, every year, Indonesia experiences deforestation of up to 113.5 thousand

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ha (Forestry, 2023), giving rise to thousands of pollution cases and recording 709 complaints of environmental and agrarian conflicts (Pandu, 2023). Indonesia also has the status of being the tenth largest contributor to carbon emissions in the world, with 589.5 billion tons of CO_2 (Wisevoter.com, 2023). 43.83% of total emissions come from the energy and mining sectors, and 21.64% are contributed by manufacturing and construction (Kementrian Energi dan Sumber Daya Mineral, 2020). This means that the energy, mining, manufacturing, and construction sectors have a large role in exacerbating environmental degradation.

The crucial condition of Indonesia's environment has attracted attention from various parties, including the public (society), community, and government. The Indonesian government realizes the importance of preserving the environment by producing a set of regulations related to the environment. Starting in 1990, as an effort to overcome river pollution, the Indonesian government, through the environment Ministry, discussed policies as anticipatory steps. Furthermore, Law No. 23 of 1997 concerning environmental management was published. In addition, anticipatory steps were taken by expanding the assessment of environmental conditions to 3 forms of pollution, namely water, air, and land, which was officially implemented in 2002 (Yaya et al., 2018). The large contribution by companies to environmental damage encourages the government to appeal to and pressure companies through the issuance of environmental regulations such as BAPEPAM LK Regulations, Law no. 40 of 2007 concerning Limited Liability Companies, up to the latest in the form of Financial Services Authority Regulation no. 51/POJK/03/2017 regarding the obligation of companies to produce sustainability reports. However, guidelines for the publication of environmental information need to be provided, and environmental social responsibility reporting by companies still needs strict sanctions, resulting in environmental reporting as if it were voluntary (Solikhah et al., 2020).

Environmental disclosure is a form of corporate responsibility towards the environment and stakeholders (Dintimala and Amril, 2018). When a company cares about its reputation and business sustainability, it actively practices environmental disclosure (Acar et al., 2021). However, in practice and implementation, preparing reports related to environmental information still needs to be clarified (Bradford et al., 2017). Disclosure of environmental information is now incorporated explicitly or implicitly in annual reports and sustainability reports or is sometimes available in social and environmental responsibility reports. This ambiguity can be seen in the company's freedom to attach environmental information to related reports and how detailed the information is presented. Companies are expected not only to implement environmental protection measures but also to publish information regarding this implementation to the public (Li et al., 2018; Liesen et al., 2017), especially when environmental information is one of the important ingredients for stakeholders in making company-related decisions.

Research on environmental disclosure in Indonesia is documented with varied results. Some studies refer to well-known companies such as LQ45 (Rupley et al., 2012) or to companies in certain sectors that are considered environmentally sensitive (Radhouane et al., 2020). (Maulia and Yanto, 2020) tested the agricultural, consumer goods, basic industry, and chemical sectors, with results showing that the level of environmental disclosure in these industries was still below 50%. (Utomo et al., 2020) explored the non-financial industry from 2012 to 2018 with worse results. The level of environmental disclosure in non-financial companies was below 30%. Environmentally sensitive industries have a close relationship with the environment, especially because their operational processes cause waste residue and pollution, utilize natural resources, and are impacted and have an impact on the environment. Environmentally sensitive industries tend to threaten the environment and are sensitive to environmental damage (Solikhah et al., 2020). These companies include mining, oil exploration, paper manufacturing, chemicals, and similar sectors, energy, and metals (Cho and Patten, 2007).

This study will explore the quality of environmental disclosure in manufacturing and mining companies as environmentally sensitive industries by investigating the driving aspects of environmental disclosure. Our study seeks to contribute to filling the research gap on environmental disclosure in environmentally sensitive industries. This study also offers insight into trends in corporate environmental disclosure levels since the start of the COVID-19 pandemic. Observations on the quality of environmental disclosure in this study will develop an approach to environmental disclosure practices in developing countries such as Indonesia. To achieve this aim, this study is structured with the following subchapters. First, we present the theoretical and empirical literature briefly and relevantly. Second, we explain in detail the analysis method and description of the population and research sample. Third, we present an exploration and discussion of the research results obtained. Fourth or finally, we summarize, conclude, and present research implications and suggestions for future research.

2. THEORETICAL REVIEW

Environmental disclosure in this study is examined through legitimacy theory and stakeholder theory. Social and environmental disclosure practices are often explained by legitimacy theory and stakeholder theory, making them the main theories of research (Ofoegbu et al., 2018). Both legitimacy theory and stakeholder theory argue that companies will act to meet the demands of various parties, especially their stakeholders, to gain legitimacy (Joshi et al., 2011). The company will strive to strengthen stability and advance the company's development by providing a socially significant impact on society and distributing economic, social, and political benefits to interest groups (Solikhah et al., 2020).

2.1. Legitimacy Theory

Legitimacy is defined as a condition or status where there is a match between the values of an entity/organization and the social values surrounding that entity (Deegan, 2002). Legitimacy is a form of social contract between an entity and the surrounding community, where the outcome of the contract determines the sustainability of the company's business (Archel et al., 2009) so that the company will strive to gain legitimacy and reduce existing gaps. Legitimacy theory explains that companies carry out a series of social practices to gain support and become accepted by the norms of the surrounding community (Acar et al., 2021). One of these social practices is environmental disclosure. Environmental disclosure provides information regarding the impact of company operations on the environment and the company's efforts to overcome these impacts. The company's concern for environmental problems shows that the company is sensitive to the social and environmental problems faced by society. Companies that carry out environmental preservation and provide environmental disclosures are considered to care about the community to gain legitimacy from the community.

2.2. Stakeholder Theory

Stakeholder theory presents a certain group/party that influences and is influenced by the company so that the company has responsibility for this party (Freeman, 2010). These parties are then known as stakeholders. Stakeholders have the authority to control or influence the allocation of economic resources in company operations. The closer the economic relationship between stakeholders and the company and the greater the economic resources involved, the stronger the influence of stakeholders on the company. The concept of stakeholder theory shows that companies do not move and operate for their interests but must also provide returns to stakeholders. To maintain harmonious relationships with stakeholders, company management must provide all financial and non-financial information related to its operations (Wakaisuka-Isingoma et al., 2016). Environmental disclosure is a form of non-financial information related to company sustainability (because it provides information about the impact of company operations on the environment, how the company manages natural resources, and how the company is responsible for the environment) (Solikhah and Maulina, 2021). The close relationship between environmental activities and corporate sustainability makes environmental disclosure important for stakeholders.

3. REVIEW OF PREVIOUS RESEARCH AND HYPOTHESIS DEVELOPMENT

3.1. Environmental Disclosures

Over the last few years, studies regarding environmental disclosure have continued to increase and develop in a positive direction. In this session, the results of the exploration were presented, which focused on the development of environmental disclosure research in Indonesia, especially that linking environmental disclosure, company characteristics, financial performance, and corporate governance. Sixteen years after the issuance of Law No. 40 of 2007 concerning limited liability companies, the government, through this law, requires companies to carry out social and environmental responsibilities. To implement social and environmental responsibility, the government also forces companies to publish sustainability reports which include social and environmental items. Financial Services Authority Regulation POJK No. 51/POJK.03/2017 concerning the implementation of sustainable finance has become active in stages since 2017, so in 2022, issuers on the Indonesian Stock Exchange are required to publish sustainability reports. The development of environmental disclosure practices goes hand in hand with research. Overall, research conducted by various researchers shows that the level of environmental disclosure in Indonesia is still below standard. There are only two studies that found environmental disclosure scores by companies in Indonesia more than 50% or half of the maximum score (Table 1). On the other hand, many researchers focus on the level of environmental disclosure in the manufacturing and mining sectors, but the results in these sectors tend to be concerning. The manufacturing and mining sectors, as high-profile companies, have a significant and sensitive impact on the environment (Mirfazli, 2008).

Environmental disclosure research conducted by various researchers, as in Table 1, focuses on more than just developments in the intensity and quality of environmental disclosure in Indonesia. Various researchers have also expanded their exploration by analyzing what determinants are thought to be able to encourage environmental disclosure activities in Indonesia. Previous research focuses on basic components such as company characteristics, financial performance, and corporate governance, in line with the low implementation of environmental disclosure in Indonesia. The results of previous research present varied findings. First, company characteristics as represented by company size are known to have a positive effect by research (Maulia and

Table 1: Development of research results regarding environmental disclosure scores in Indonesia

Industry	Researcher	Average environmental disclosure score
Manufacturing companies	Asrori et al., 2019	23.28% (2008-2009)
	Solikhah and Maulina, 2021	9.31% (2012-2016)
	Muhimatul Ifada et al., 2021	1.71 score of maximum score 5110 (2017-2019)
	Safitri and Wahyuningrum, 2021	23.62% (2019)
	Jubaedah and Setiawan, 2023	14.85% (2018-2020)
Plantation/agriculture	Abdullah et al., 2020	45.6% (2013-2017)
	Ardi and Yulianto, 2020	41.56% (2014-2018)
Mining	Trireksani and Djajadikerta, 2016	39% (2012)
	Ardi and Yulianto, 2020	41.56% (2014-2018)
	Digdowiseiso et al., 2022	3.59 score of maximum score 5 (2014-2021)
Top companies	Purbawangsa et al., 2020	29.34% (Pefindo25 2013-2016)
	Solikhah and Maulina, 2021	0.97 score of maximum score 2833 (LQ45 2011-2016)
Nonfinancial companies that joined PROPER rating	Maulia and Yanto, 2020	41% (2014-2018)
	Wahyuningrum et al., 2020	6.43% (2014-2016)
	Pramono et al., 2023	3 score of maximum score 5 (2014-2017) (PROPER rank)
High-profile companies	Junita and Yulianto, 2018	32.18% (2011-2015)
All sector	Ifada and Saleh, 2022	1456 score of maximum score 5 (2007-2019)
	Wicaksono et al., 2023	6379 score of maximum score 25 (2017-2019)

Source: Summary of various studies, 2023

Yanto, 2020; Safitri and Wahyuningrum, 2021; Solikhah et al., 2021; Wahyuningrum et al., 2020; Wahyuningrum et al., 2019), in contrast to (Hermawan et al., 2018) who found company size did not affect environmental information disclosure. Company age is also one of the company characteristics that has been found to increase environmental disclosure in Indonesia (Indrabudiman, 2016), reduce the quality of disclosure (Wahyuningrum et al., 2019), or even not influence at all (Safitri and Wahyuningrum, 2021; Wahyuningrum et al., 2020).

Second, financial performance as a support for company operations has been widely researched by proxying it as profitability and leverage. Profitability was found by (Abdullah et al., 2020; Asrori et al., 2019; Maulia and Yanto, 2020; Purbawangsa et al., 2020) to be able to improve environmental disclosure practices. On the other hand (Digdowiseiso et al., 2022) found that profitability weakens environmental disclosure practices or does not have a significant correlation with environmental disclosure (Ardi and Yulianto, 2020; Junita and Yulianto, 2018; Safitri and Wahyuningrum, 2021; Solikhah and Maulina, 2021; Solikhah et al., 2021; Wahyuningrum et al., 2020). Leverage, which shows the company's financial condition, is known to have a negative effect (Ardi and Yulianto, 2020; Digdowiseiso et al., 2022), but several studies have found that leverage has no effect at all (Solikhah and Maulina, 2021; Solikhah et al., 2021; Wahyuningrum et al., 2020). Third, corporate governance is also starting to be researched regarding its relationship with environmental disclosure. Several researchers collectively analyze corporate governance as a single entity (Purbawangsa et al., 2020; Solikhah and Maulina, 2021; Trireksani and Djajadikerta, 2016), while several researchers proxy corporate governance as a board of directors (Indrabudiman, 2016; Trireksani and Djajadikerta, 2016; Wahyuningrum et al., 2019), board gender (Wahyuningrum et al., 2019), audit committee (Maulia and Yanto, 2020), board of commissioners (Junita and Yulianto, 2018; Maulia and Yanto, 2020; Wahyuningrum et al., 2020), independent board (Pramono et al., 2023), institutional, managerial, domestic and overseas ownership (Asrori et al., 2019; Hadiningtiyas and Mahmud, 2017; Jubaedah and Setiawan, 2023; Junita and Yulianto, 2018; Safitri and Wahyuningrum, 2021; Wicaksono et al., 2023).

As with the legitimacy and stakeholder theories that are the basis of environmental disclosure research, the motivation for environmental disclosure practices is the company's moral responsibility to society. On the other hand, the company is responsible for the financial benefits obtained from the use of natural resources, efforts to maintain the company's going concern (long life and increasing assets), and the implementation of good corporate governance.

3.2. Hypothesis Development

3.2.1. Environmental disclosure and company size

Company size represents the scale or volume of business the company produces, often measured through the number of company assets (Akhter et al., 2023). Legitimacy theory asserts that the size of the company determines how much responsibility the company has. Large companies have a responsibility to legitimize their business operations and provide all relevant information to their stakeholders (Chowdhury et al., 2020). The abundant assets of large companies indicate sufficient financial resources to support voluntary disclosure practices such as environmental disclosures (Islam et al., 2021; Michelon and Parbonetti, 2012). Large companies also have many stakeholders, so they receive stricter supervision from their stakeholders than small companies. Large companies will produce all forms of information desired by their stakeholders to maintain their relationships with stakeholders. Apart from that, a large business scale will be accompanied by a large utilization of natural resources and will also have a significant impact on the environment. Several research findings show that the larger the company, the more environmental disclosure information it provides (Ahmadi and Bouri, 2017; Akhter et al., 2023; Ismail et al., 2018; Lee, 2017).

H_1: Company size has a positive and significant effect on the quality of environmental disclosure.

3.2.2. Environmental disclosure and company age

Company age is defined as the total number of operational years since the company was founded until now (Razzaque et al., 2016) or how long the company has been listed on the stock exchange of the country where it operates (Akhtaruddin, 2005). Company age is largely determined by the company's resilience to all external threats (Dogru et al., 2022) as well as demands from stakeholders. Companies can survive well when they can adapt to the scarcity of production resources due to environmental damage. In addition, legitimacy theory emphasizes that a company's concern in the long term depends on public acceptance of the company. A strong, legitimate relationship between the community or stakeholders and the company is not built quickly. Companies develop credibility, trust, and corporate image through products, services, and social activities as the company operates (Asif et al., 2013; Samarah et al., 2022). Long life reflects the company's strong, legitimate relationship with society and stakeholders. Therefore, the legitimacy formed will be maximally maintained by the company, including by carrying out environmental activities and disclosures. Company age also reflects stable internal strength in the form of strong finances, adaptable management, and good corporate governance so that the company can maintain the sustainability of its business (Abubakar et al., 2019). Company age and environmental disclosure have a congruent continuity, where long-aged companies carry out good environmental disclosure practices (Ahmadi and Bouri, 2017; Ismail et al., 2018; Lee, 2017; Ohidoa et al., 2016).

H_2: Company age has a positive and significant effect on environmental disclosure.

3.2.3. Environmental disclosure and profitability

Financial performance is a key factor that determines the level of implementation of voluntary practices such as environmental activities and disclosures (Khlif et al., 2015). Profitability as a form of company financial performance is a factor that gives companies flexibility and freedom to practice broader environmental actions (Martínez-Ferrero et al., 2015). A company with high profitability has sufficient financial resources to invest in social and environmental programs and make better environmental disclosures (Artiach et al., 2010; Nassreddine, 2022). On the other hand, companies with low profitability will prioritize the sustainability of the company's business operations and meet economic demands rather than spending money on environmental practices. Companies with high profitability are considered to have utilized natural resources on a large scale to gain profits and have played a significant role in environmental damage. Therefore, these companies will receive more public pressure and scrutiny, so companies will increase environmental disclosure practices to gain legitimacy from stakeholders (Khlif et al., 2015). Environmental disclosure practices will also strengthen a company's competitive advantage in the eyes of consumers. High profitability can significantly encourage companies to present quality and adequate environmental disclosures (Ahmadi and Bouri, 2017; Ismail et al., 2018; Kansal et al., 2014; Nassreddine, 2022; Nurhayati et al., 2015).

H_3: Profitability has a positive and significant effect on environmental disclosure.

3.2.4. Environmental disclosure and leverage

Financial performance is not only seen from the company's ability to generate profits (profitability) but also the financial health condition in terms of assets, capital, cash flow, and company liabilities. Leverage represents the company's health condition because it shows how much funds are allocated to finance fixed expenses in the form of interest and principal on the company's debt. A company's ability to pay its debts and dependence on funding from creditors can be seen from its leverage ratio. The company's risk will be greater along with the higher the company's leverage ratio (Kipngetich, 2019). A high level of leverage indicates the company's dependence on funding in the form of liabilities. Also, it illustrates that the company has a large allocation for interest payments and liabilities (Choi et al., 2013). The company's liability responsibility provides opportunities to implement social contract efforts. Companies with high liabilities prioritize focusing on credit payments and business activities rather than engaging in environmental disclosure activities (Digdowiseiso et al., 2022). High-leverage companies consider voluntary activities such as environmental disclosure to be actions that worsen and harm the company's finances (Luo et al., 2013). In addition, stakeholder theory explains that creditors will pay great attention to companies with high leverage, thereby limiting the company's involvement in social and environmental activities. The level of leverage has a negative effect or reduces the company's desire to implement environmental disclosure (Hapsari and Prasetyo, 2020).

H_4: Leverage hurts environmental disclosure.

3.2.5. Environmental disclosure and foreign ownership

The presence of foreign investors in a company can be seen through the percentage of share ownership by shareholders of nationalities other than the country where the company's shares are listed (Barako et al., 2006). Foreign investors usually provide a diversity of points of view within the company, especially regarding providing supervision to company management. Share ownership by foreign investors is expected to provide intensive monitoring of global hot topics, including topics related to the environment (Young et al., 2008). (Gerged, 2021) dan (Ismail et al., 2018) found that the existence of share ownership by foreign investors plays a role in encouraging environmental disclosure practices. Based on statistical data from the Indonesian Stock Exchange, the proportion of foreign investors active in the Indonesian capital market will reach 34% at the end of 2022 (IDX, 2023); this number is quite significant. On the other hand, many companies have a dominant proportion of foreign ownership. This condition shows the potential for significant impact and pressure from foreign ownership on the company. The existence of foreign share ownership encourages companies to improve environmental disclosure practices better.

H_5: Foreign ownership has a positive and significant effect on environmental disclosure.

3.2.6. Environmental disclosure and audit committee

The audit committee is like an extension of the company's board of directors and commissioners, so generally, the committee members are also board members. Still, they can also be individuals chosen exclusively by the board. The audit committee is an important organizational component for improving governance and internal audit independence in companies (Biçer and Feneir, 2019). The formation of an audit committee aims to place the company in ideal conditions to face challenges in the business environment while supporting the board and management through these challenges (Bromark and Hoffman, 1992). Apart from that, the position and role of the audit committee are very crucial in checking aspects of company reporting so that it complies with applicable legal, ethical, and regulatory provisions (Nwafor and Amahalu, 2021). Therefore, when companies are required to carry out activities and reporting related to social, environmental, and sustainability, the committee's role is to ensure that all management and functional parties carry them out well. The role of the audit committee in the reporting aspect is considered to improve the quality of information conveyed to stakeholders (Khlif and Samaha, 2014). The audit committee will encourage company management to start practicing environmental disclosure as a commitment to applicable regulations and responsibility to stakeholders. The optimal role of the audit committee is to improve non-financial reporting, such as environmental reporting (Latifah et al., 2019). Previous research found that the existence of an audit committee is related to environmental disclosure (Appuhami and Tashakor, 2017).

H_6: The audit committee has a positive and significant effect on environmental disclosure.

4. RESEARCH METHOD

This research focuses on mining and manufacturing companies listed on the Indonesia Stock Exchange (BEI) during the 2020-2022 period as the research population. This period was chosen to see how environmental disclosure practices were in the new era or during and after the COVID-19 pandemic. Apart from that, public companies listed on the Indonesia Stock Exchange are selected because they are expected to provide more environmental information than closed companies. There are several criteria in selecting the research sample, including companies that are consistently listed on the Indonesia Stock Exchange during 2020-2022 and actively publish their sustainability reports. Second, companies that consistently provide financial information in financial and annual reports. At the end of 2022, there will be 825 listed companies listed on the Indonesian Stock Exchange, but 219 listed companies in the manufacturing and mining sectors are consistently listed. After removing companies that did not consistently publish sustainability reports and annual reports, we obtained 40 companies or 120 analysis units.

4.1. Description of the Model and Research Variables

This research designs a regression model to test all hypotheses developed with a series of analyses in the form of descriptive statistics, classical assumption tests, and multiple linear regression. A summary of the definition and measurement of each research variable is presented in Table 2.

$$ED = \alpha + \beta_1 SIZE + \beta_2 AGE + \beta_3 PROFIT + \beta_4 LEV + \beta_5 FOREIGN + \beta_6 KOM\_AUD + e \quad (1)$$

Information:

ED = environmental disclosure index;

SIZE = total company assets;

AGE = company age since listing on the IDX;

PROFIT = return on assets;

LEV = debt to assets ratio;

FOREIGN = percentage of share ownership by foreign investors;

KOM_AUD = number of audit committees.

The environmental disclosure index represents the dependent variable in this study. This study uses an index that has been developed by (Baalouch et al., 2019) by matching the presence of 40 items to company sustainability reports. This study applies content analysis with a numerical scoring approach where each item is considered equally. It gives a value of 1 for items that are disclosed in the company's sustainability report and a value of 0 for items that are not mentioned at all. This study examines company size, company age, profitability, leverage, foreign ownership, and audit committee, whose proxies can be seen in Table 2.

5. RESULTS AND DISCUSSION

5.1. Results

There has been an increase in environmental disclosures from 2020 to 2021, as shown in Figure 1. While this study does not establish a statistical correlation between the rising trend of environmental disclosure and the COVID-19 pandemic as it does between the period preceding and following the pandemic, it does offer a comprehensive analysis of the trend from 2020 to 2021. In 2020, manufacturing and mining companies disclosed environmental information with a notable degree of proficiency, as evidenced by the fact that they provided more than half of the items in the environmental disclosure index, which is 0.532. These results suggest that despite the company's precarious situation, such as the COVID-19 pandemic, it continues to effectively communicate environmental information (Ika et al., 2023). According to (Zhang and Fang, 2022) such outcomes are possible when an organization demonstrates a dedication to environmental sustainability. Significant progress was made towards reducing environmental disclosure following the COVID-19 pandemic in 2021 and 2022. Furthermore, the company's enhanced business and operations, which facilitate the implementation of environmental disclosures, may have an impact on these conditions.

In addition, this study aims to provide a comprehensive overview of environmental disclosure in the mining and manufacturing sectors of each industry or business sector. Public companies listed on the Indonesia Stock Exchange are substantially obligated to adhere to sector categorization. Since January 25, 2021 companies on the Indonesia Stock Exchange have been classified into 12 sectors, whereas the mining and manufacturing sectors are interconnected with numerous other industries. This study is guided by previous research (Rudyanto and Siregar, 2018; Sriningsih and Wahyuningrum, 2022) and attempts to compile data from mining and manufacturing firms. The company sectors sampled include energy, basic materials, non-cyclical consumer companies, cyclical consumer companies, industry, and health. As shown in Figure 2, there is an upward trend among businesses in the energy, industrial, and health sectors. Conversely, the non-cyclical consumer sector exhibits a propensity for stability in 2022, whereas the fundamental materials and cyclical consumer sectors experience a decline. In comparison to other sectors, energy companies have the highest average environmental disclosure

Table 2: Operational definitions of research variables

Variables	Definitions	Measures
ED	ED submission of environmental information through annual reports, sustainability reports, separate reports, or through the company's website. (Bhatia and Makkar, 2020)	The unweighted environmental index is based on Baalouch et al., (2019) (Baalouch et al., 2019) by giving a score of 0 for items that are not disclosed and a score of 1 for items that are disclosed
Company size (SIZE)	The size of the company's business scale and the size of the company's assets. (Aniktia and Khafid, 2015)	Natural logarithm of total assets. (Rudyanto and Siregar, 2018)
Company age (AGE)	The age of the company since the company was listed on the stock exchange (Wahyuningrum et al., 2021)	The research year minus the year the company listed on the stock exchange. (Wahyuningrum et al., 2021)
Profitability (PROFIT)	The entity's ability to produce profits from business activities using the economic resources it owns. (Van Horne and Wachowicz, 2009)	Return on assets ratio, dividing net profit by the company's total assets
Leverage (LEV)	The entity's ability to pay long-term liabilities	Debt to assets ratio, dividing total liabilities by total company assets
Foreign ownership (FOREIGN)	The percentage of equity in the form of shares owned by foreign investors. (Barako et al., 2006)	The number of shares owned by foreign investors is divided by the number of shares outstanding. (Gerged, 2021)
Audit committee (KOM_AUD)	The audit committee is a board whose role is to carry out tasks related to audits in the company. (Pucheta-Martínez et al., 2021)	Number of audit committees in the company.(Sriningsih and Wahyuningrum, 2022)

Source: From various literature, 2023. ED: Environmental disclosure, KOM_AUD: Number of audit committees, SIZE: Total company assets, AGE: Company age since listing on the IDX, PROFIT: Return on assets, LEV: Debt to assets ratio, FOREIGN: Percentage of share ownership by foreign investors

Figure 1: Environmental disclosure trends propagating among Indonesian mining and manufacturing firms from 2020 to 2022. Source: Processed data, 2023

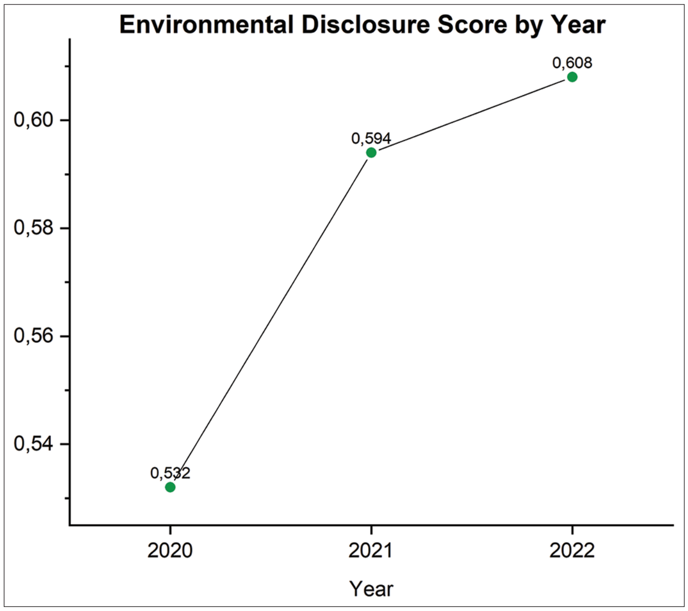
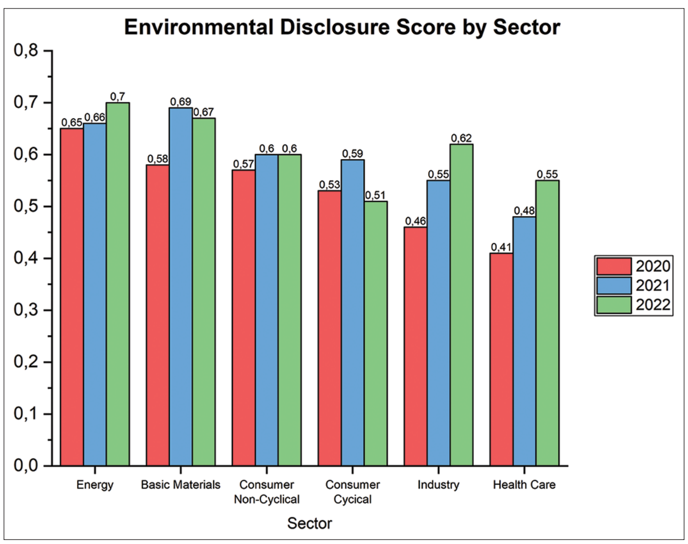


Figure 2: Environmental disclosure trends by sector for each company during 2020-2021



score, indicating that this industry has the greatest environmental commitment.

This study conducts descriptive statistical analysis, presented in Table 3, as a means of average values exceeding the standard deviation for the variables of environmental disclosure, company size, company age, leverage, foreign ownership, and audit committee. This condition represents that there is no variation in data distribution. In contrast, profitability has a varied data distribution as seen from its standard deviation which is greater than the average.

In order to determine the unbiased nature of the results generated by the experiments in this investigation, a classical assumption test is performed. The results of the classical assumption test indicate that a number of conditions do not apply to the regression model. To begin with, the Kolmogorov-Smirnov significance value of 0.200 indicates that the data under investigation exhibits a normal distribution. Furthermore, in order to attain autocorrelation-free results, the Durbin-Watson value must fall within the interval of $1.7896 < 1.896 < 2.2104$ which is between the minimum and maximum thresholds (dU) of 4-dU. Additionally, the variance inflation factor remains below 10, adhering to a tolerance of <1, thereby ensuring that the regression model remains free from multicollinearity. In this study, it is confirmed that the regression model satisfies the heteroscedasticity test when the $P > 0.5$. Consequently, the regression model may proceed to the stage of multiple linear regression analysis, the outcomes of which are displayed in Table 4.

5.2. Discussion

5.2.1. The effect of company size on environmental disclosure

In accordance with legitimacy theory, which states that larger corporations hold more responsibilities than smaller ones, the findings of this research indicate a positive correlation between the scale of a company and its level of environmental disclosure. There is a tendency for large companies with substantial market share or business scope to maintain their social standing. The company ensures the preservation of its reputation among stakeholders, including the general public and consumers, through the implementation of voluntary initiatives such as disclosure practices and environmental protection (Adams et al., 1998; Ismail et al., 2018). According to (Reverte, 2009), a company's market share and visibility increase when it is perceived as environmentally benign and manufactures products that do not harm the environment. (Akhter et al., 2023) discovered that large corporations have the highest level of public accountability regarding their environmental information. Discovered that large corporations have the highest level of public accountability regarding their environmental information (Lee, 2017). Consistent with numerous empirical studies, the results of this investigation confirm that the magnitude of a company is notably correlated with the calibre of its environmental disclosure (Ahmadi and Bouri, 2017; Ismail et al., 2018; Lee, 2017; Ohidoa et al., 2016; Okafor et al., 2022; Wahyuningrum and Budihardjo, 2018; Wahyuningrum et al., 2021; Welbeck et al., 2017).

5.2.2. The effect of company age on environmental disclosure

The findings of this study indicate that company age has no relationship with the quality of environmental disclosure. Both new short-lived and long-lived companies attempt to present environmental disclosures. Negative t values in Table 4 suggest that there is an inverse relationship between the age of a company and its level of environmental disclosure. In other words, environmental disclosure is marginally impacted negatively by the age of the company. Established corporations are perceived as lacking the fortitude to adjust to the demands of their stakeholders in the current era, wherein environmental concerns have garnered the interest of numerous entities. On the other hand, young companies take the opportunity to increase environmental disclosure in an effort to enhance their reputation. Based on the previous study (Leyva-de la Hiz and Bolívar-Ramos, 2022) established businesses tend to be overly cautious and do not

Table 3: Descriptive statistics analysis results

Descriptive statistics					
Variables	**n**	**Minimum**	**Maximum**	**Mean**	**SD**
ED	120	0.20000	0.92500	0.6160417	0.13389745
Profit	120	−0.27940	0.45430	0.0720417	0.10012157
Size	120	28.05890	42.31550	34.2919758	5.02647210
Age	120	3.00000	45.00000	20.6333333	11.27645970
Leverage	120	0.00090	0.96130	0.4480017	0.22394430
Foreign	120	0.00090	0.99900	0.3243742	0.28601218
Audit com	120	3.00000	6.00000	3.3833333	0.73545656
Valid n (listwise)	120				

SD: Standard deviation, ED: Environmental disclosure

Table 4: Multiple linear regression analysis hypothesis test results

Coefficients (5 % significance)					
Model 1	**Unstandardized coefficients**		**Standardized coefficients**	**T**	**Significant**
	B	**SE**	**Beta**		
Constant	0.249	0.097		2.578	0.011
Size	0.008	0.002	0.282	3.149	0.002**
Age	−0.001	0.001	−0.066	−0.742	0.460
Profit	0.285	0.122	0.213	2.343	0.021**
Leverage	−0.029	0.052	−0.048	−0.545	0.587
Foreign	−0.014	0.043	−0.030	−0.326	0.745
Audit Com	0.036	0.016	0.198	2.198	0.030**

Dependent variable. SE: Standard error, **denotes as 5% significance Source: Output SPSS, 2023

perceive environmental disclosure as either futile or challenging to implement. The establishment of this conservative inclination can be attributed to the culture and approach to management that have evolved gradually. An additional situation is stated by (Akhter et al., 2023) which demands that publicly traded firms on the stock exchange have furnished environmental disclosures that comply with pertinent regulations, including OJK regulation No. 51/POJK.03/2017. However, an examination of the research sample, which remains relatively small in comparison to the total number of publicly traded companies, reveals that environmental disclosure awareness is also relatively low. This study does not find that the age of a company has a significant impact on whether it encourages or discourages environmental disclosure practices. This finding aligns with previous research (Safitri and Wahyuningrum, 2021; Wahyuningrum et al., 2020).

5.2.3. Profitability of capitalization in relation to environmental disclosure

The results of this study provide support for the theory that a company's environmental disclosure provides higher quality when it possesses a greater capacity to generate profits. (Khlif et al., 2015) stated that the company's ability to generate profits is a key factor that determines the level of implementation of environmental disclosure practices. High profitability ratios indicate that a company has substantial profits and effective management. Profit, being a financial resource of the organization, will grant management the adaptability to incorporate social and environmental initiatives (Martínez-Ferrero et al., 2015). In addition to being able to publish environmental information in an accountable manner, the organization will be prepared to invest its funds in environmental protection practices (Nassreddine, 2022). In line with legitimacy theory, the organization is going to establish its standing in society by disseminating information regarding community-accepted environmental protection standards when it has the capacity to cause harm to the environment. Environmental concerns are often associated with companies that have achieved high levels of profitability, which has led to increased scrutiny and pressure from stakeholders (Khlif et al., 2015). High profitability ratio significantly affects the implementation of corporate environmental disclosure both in quantity and quality (Ahmadi and Bouri, 2017; Ismail et al., 2018; Kansal et al., 2014; Nassreddine, 2022).

5.2.4. The effect of leverage on environmental disclosure

Leverage has a negative but insignificant effect on environmental disclosure. This study proposes that companies with low and high levels of leverage have environmental disclosures that are essentially equivalent. However, the tenuous inverse correlation between environmental disclosure and leverage continues to serve as an implicit sign. The extent to which a company is able to repay its debts may hinder its environmental disclosure efforts, as the organization will be preoccupied with debt principal and interest payments (Digdowiseiso et al., 2022). It is also feasible for companies to use leverage in a manner that does not impact environmental disclosure, given that the levels of corporate debt are comparatively similar. Nevertheless, several prior research has indicated that engaging in environmental disclosure activities can be detrimental to a company's financial health (Digdowiseiso et al., 2022; Luo et al., 2013). The company's capacity to allocate financial resources towards voluntary initiatives, such as environmental disclosure, will be constrained by the level of leverage (Hapsari and Prasetyo, 2020). The study by (Maulia and Yanto, 2020) presents the conclusive findings that leverage does not exert a substantial influence on environmental disclosure.

5.2.5. The effect of foreign ownership on environmental disclosure

The impact of foreign investors' presence in the shareholding structures of Indonesian mining and manufacturing companies is insignificant. This result contradicts various previous studies, which state that share ownership has a positive relationship with environmental disclosure (Ananzeh et al., 2023; Baba and Baba, 2021; Saini and Singhania, 2019). The number of foreign investors who have been disrupted by domestic investors has weakened their influence on corporate decision-making. On the other hand, non-controlling foreign investors are typically uninformed regarding the criticality of environmental disclosure implementation. Foreign investors with an immediate trading horizon will place a higher value on short-term profits than on long-term projects of the company. However, while the extent to which foreign investors hold controlling stakes in Indonesian companies may fluctuate based on the company's policy, foreign ownership does not dominate the majority of businesses in the country. Therefore, in this study, foreign ownership does not significantly encourage environmental disclosure practices.

5.2.6. The effect of audit committee on environmental disclosure

The presence of an audit committee, especially in an optimal number, has a positive impact on environmental disclosure practices. A higher number of audit committee members correlates positively with the quality of an organization's published environmental disclosure. (Biçer and Feneir, 2019) argue in their research that the establishment of an audit committee within an organization will enhance the independence and governance of its internal audit, thereby increasing its accountability. The audit committee has a critical role in ensuring that the company provides reports that comply with regulations while meeting stakeholder demands (Nwafor and Amahalu, 2021). Furthermore, it is acknowledged that the audit committee's reporting responsibility has the potential to enhance the informational quality of environmental disclosures (Khlif and Samaha, 2014). As part of the supervisor in the company, the audit committee holds the authority to force management to initiate environmental disclosure in adherence to relevant regulations and accountability to stakeholders. Optimal functioning of the audit committee will result in increased disclosure of non-financial information, including environmental reporting (Latifah et al., 2019). Environmental disclosure is correlated with the presence of an audit committee, according to previous research (Appuhami and Tashakor, 2017).

6. CONCLUSION

The objective of this research is to offer preliminary findings regarding environmental disclosure practices implemented by mining and manufacturing firms in Indonesia between 2020 and 2022. Furthermore, this research examines the factors that are hypothesize to have an impact on the standard of environmental disclosure. The process of attaining the research objectives commenced with the selection of the research population, which consisted of 120 units of analysis or 40 sample corporations. Following the item inventory method, a sequence of quantitative analyses, including descriptive statistical analysis, the classical assumption test, and multiple linear regression analysis, were applied to the data in accordance with the research objectives. To illustrate the trajectory of environmental disclosure in the contemporary era, specifically during and following the COVID-19 pandemic, this research presents trend charts that categorize information by company sector and cumulatively.

The results of this study indicate that the trend of environmental disclosure in the 2020-2021 period tends to increase. In the first period of covid-19, the disclosure of environmental information by manufacturing and mining companies was 0.532 or 53.2% of items had been provided. This suggests that despite the company facing a challenging situation like the COVID-19 pandemic, it effectively communicates environmental information. There is a noticeable upward trajectory among companies operating in the energy, industrial, and health sectors. On the other hand, non-cyclical consumer sector firms exhibit a propensity for stability in 2022, whereas fundamental materials and cyclical consumer sector firms experience a decline. Environmental disclosure is positively correlated with company size, profitability, and audit committee, according to the results of the regression analysis. As a consequence, it is feasible that larger corporations, those with greater profitability, and those that appoint the ideal number of audit committee members will furnish environmental disclosures of superior quality. In contrast, there is no significant correlation between foreign ownership, company age, or leverage and environmental disclosure.

This study found results that support legitimacy and stakeholder theory that corporate commitment to environmental disclosure is quite good. Stakeholders, especially the government, can view the results of this study that large and highly profitable companies should provide quality environmental information. Additionally, this research offers practical ramifications for a multitude of stakeholders. An examination of trends in environmental disclosure by sector will reveal which industries should be compelled to engage in environmental disclosure efforts more actively, while others can be left unchanged and optimized. However, this research does possess certain limitations, specifically the explanation of covid-19 trends is restricted to graphical representations. The relationship between environmental disclosure trends and covid-19 conditions has not been analyzed in this study, nor has an analysis of trends preceding covid-19 been presented. Subsequent investigations may capitalize on this opportunity to examine patterns that existed prior to and subsequent to the COVID-19 pandemic. Furthermore, environmental disclosure item measurement is performed exclusively in a dichotomous fashion. Further investigation may benefit from employing a more comprehensive scoring system to evaluate the quality of environmental disclosures.

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