The Asian Journal of Technology Management Vol. 14 No. 2 (2021): 153-171

Environmental Information Disclosure Assessment: The Case of Manufacturing Firms Listed on the Indonesia Stock Exchange

Sofik Handoyo*
Faculty of Economics and Business, Universitas Padjadjaran, Bandung, Indonesia

Abstract. *This study aimed to assess the environmental information disclosure of listed manufacturing firms on the Indonesia Stock Exchange. Furthermore, this study used the content analysis procedure of the firm's annual reports and sustainability reporting. The Global Reporting Initiative (GRI) standard was adopted as the guidelines for assessing environmental disclosure. Meanwhile, the evaluated topics are material, energy, water, biodiversity, emissions, effluents and waste, environmental compliance, and supplier environmental assessment. The results showed that manufacturing firms had disclosed environmental information at a moderate level, and the average performance level was relatively low. Furthermore, by topic, the environmental performance levels showed that disclosure related to effluents and waste was the highest, followed by energy, materials, emissions, water, biodiversity, and compliance, respectively. The results indicated that the Indonesian government needs to improve environmental law enforcement for industrial practice. Furthermore, Indonesia's capital market authority is expected to introduce a sustainability index as part of a business organisation's concern for environmental protection. The Institute of Indonesia Chartered Accountant (IAI) also needs to consider developing a standard for environmental reporting as an integral part of corporate financial reporting.*

Keywords: *Annual report, environmental disclosure, environmental compliance, stock exchange, sustainability reporting*

1. Introduction

Businesses have evolved today to be more complex and competitive (Amin, Zailani, & Rahman, 2020), and environmental issues have become the centre of attention of business organisations, governments and the global community (Ismail & Rahman, 2016; Sulaiman, Abdullah, & Fatima, 2014). Meanwhile, the increasing stakeholder's concern on environmental sustainability implies that accountability is pivotal for the business organization (da Silva Monteiro & Guzmán, 2010; Hewaidy, 2016; Karthikeyani & Angalakshmi, 2013). Therefore, firms are now under pressure from investors, governments, NGOs, and other stakeholders to ensure their business activities comply with the environmental sustainability goals (Karthikeyani & Angalakshmi, 2013). Institutional pressure that voices the importance of environmental sustainability drives the firms to make public exposure to environmental information (Albertini, 2014). Also, business organisations are often regarded as the most responsible party for environmental damages (Nanggong & Rahmatia, 2019). Consequently, more firms disclose their environmental information as part of their accountability to stakeholders (Sulaiman et al., 2014)

The environmentally-friendly issues in the business context are more targeting the corporation as economic actors (Nanggong & Rahmatia, 2019). Firms that produce large amounts of pollution face tight regulation, media attention and increased pressure from stakeholders. A firm's compliance with environmental regulations is an essential aspect that investors consider when making an investment decision (Iatridis, 2013).

*Corresponding author. Email: sofik.handoyo@unpad.ac.id
Received: May 6th, 2021; Revised: July 10th, 2021; Accepted: July 10th, 2021
Doi: http://dx.doi.org/10.12695/ajtm.2021.14.2.4
Print ISSN: 1978-6956; Online ISSN: 2089-791X.

Therefore, the firms that belong in the sensitive category to the environment tend to thoroughly disclose environmental information compared to non-environmentally sensitive firms (Albertini, 2014; Trireksani & Djajadikerta, 2016). These firms need to inform the public about their efforts to protect the environment from the negative impact of their business operation. Sustainability reports issued by environmentally sensitive firms are considered a strategy to obtain legitimacy to continue their business operation (Kuo & Chen, 2013). Meanwhile, several earlier studies showed that environmental information disclosure is driven by the motivation to improve the firm's image and reputation (Kuo & Chen, 2013).

Public awareness of environmental issues drives business organisations to consider information disclosure both on financial and environmental aspects (Ismail & Rahman, 2016). Therefore, environmental information disclosure becomes a strategic issue for business organisations (Iatridis, 2013) and is generally presented in the firm's annual and sustainability reports and website (Gunawan, Djajadikerta, & Smith, 2009; Lee, 2017). Disclosure of environmental information to the public provides stakeholders with an insight to assess the firm's orientation regarding its environmental policy (Iatridis, 2013). This disclosure is a form of communication to the public regarding efforts that the firms have carried out to maintain environmental quality. As stakeholders become more concerned with ecology, environmental performance will determine the firm's sustainability in the future. Furthermore, when environmental sustainability is part of society value, the mutual relationship between stakeholders and the firms will be evaluated based on the firm's accountability and responsibility to the environment.

Environmental disclosure has become a topic of study that has received much attention from researchers. The studies have been conducted by scholars from different countries and cross-continent (Eljayash, 2015). However, studies on environmental disclosure have been primarily carried out in advanced countries. Even though there is an increasing trend in developing countries, the number is still significantly fewer than in advanced countries (Djajadikerta, & Trireksani, 2012; Eljayash, 2015; Hewaidy, 2016). Therefore, this study was motivated by a lack of understanding of the environmental disclosure practices in Indonesia. Previous studies mainly examined the association of the firm's environmental disclosure with financial performance among listed companies using an empirical approach.

Unfortunately, those studies were unable to provide information regarding the current standing of the environmental disclosure practices. Each country has differences in economic, political, national cultural, moral judgments, and social values (Djajadikerta & Trireksani, 2012). Therefore, assessing the environmental disclosure practices in Indonesia is necessary to create a baseline for comparing with the practices in other countries.

In the Asian context, studies on environmental disclosure have been carried out in developed countries such as Japan and South Korea. Furthermore, environmental disclosure among neighbouring countries such as Malaysia, Singapore, Thailand, Vietnam, and India has been disclosed in reports and publications. However, there is still limited information about the practice from an Indonesian perspective, especially for manufacturing firms. In Indonesia, studies related to environmental information disclosure have been previously conducted by several scholars. Suhardjanto, Ashardianti, and Setiany (2018) and Trireksani and Djajadikerta, (2016) studied the association between firm characteristics and environmental information disclosure levels. Meanwhile, the influence of information disclosure on firm performance has been studied by Deswanto and Siregar (2018), Purnomo and Widianingsih (2012), and Setiadi, Rahmawati, Suhardjanto, & Djuminah

(2017). Unlike previous studies that focused on academic orientation, this study emphasised practice orientation. Therefore, the findings are expected to have practical benefits for policymakers.

This study aimed to understand the extent of environmental disclosure among manufacturing firms listed on the Indonesia Stock Exchange using the information stated in their annual and sustainability reports. In particular, this study contributed to understanding the current environmental information disclosure practices in Indonesia. Therefore, the results can be used as a source of information for conducting a comparative study on environmental disclosures in developing countries, especially in the Southeast Asian region. Practically, Indonesian government agencies, capital market authorities, and the Institute of Indonesia Chartered Accountant (IAI) may obtain valuable insight to develop appropriate policies to support the achievement of the environmental sustainability goals.

2. Literature Review/ Hypotheses Development

Legitimacy Theory

The legitimacy theory was constructed using a political economy framework addressed to explain the motivation of organisations in carrying out specific actions (Semrau, Ambos, & Kraus, 2016). Using the basis of legitimacy theory, the motivation to disclose environmental information is the response of firms to political and public pressure. Also, the firms need to obey government environmental laws and regulations and accommodate society's concern on environmental sustainability. Institutional pressures from the state and other stakeholders greatly influence the firm's behaviour to disclose environmental information (Albertini, 2014).

The intensity of the disclosed information is determined by the level of political and public pressure. Furthermore, the higher the institutional pressures faced by the firms, the more extensive the disclosed information (Albertini, 2014).

The legitimacy theory assumes that business organisations tend to take actions aimed at maintaining the firm's image (Fatima, Abdullah, & Sulaiman, 2015). Also, there are values in society that firms need to follow to ensure continuous business activities. Protection of social rights from the negative impact of business activities is fundamental for business organisations to be accepted in society. Using the legitimacy theory perspective, the firms will take necessary actions, including environmental disclosure, to maintain their reputation (Sulaiman et al. 2014). In line with increasing stakeholder's concerns about environmental issues, the practice of disclosure by the firms is not only to meet stakeholder's pressure but also as a firm environmental strategy. Stakeholders consider environmental issues to be a factor that influences the decision to buy a product or make an investment. On that account, the firms use environmental disclosure as a strategy to maintain the relationship with stakeholders and the survival ability of the organisation.

The legitimacy theory explains that a social contract bonds a business organisation and society. This contract has the power to give social sanctions to firms that violate society values. Therefore, the firms tend to react according to society's expectations (Sulaiman et al. 2014). The firms will also continue to strive to ensure that their business activities are not violating social contracts (Juhmani, 2014). Furthermore, social and environmental disclosure is a way for firms to legitimise business activities (Juhmani, 2014). Firms need to act in favour of social values in order to obtain legitimation. Also, environmental disclosure provides the public with vital information to understand its policy and whether it corresponds with social values. Therefore, environmental information disclosure can enhance a firm's reputation and provide legitimacy for existence.

Differences in law enforcement, social values and national culture make the practice of environmental disclosure between countries varied (Djajadikerta & Trireksani, 2012). The practice of environmental disclosure by business organisations in advanced countries is ahead of the practices in developing countries. One of the keys to the success of environmental sustainability programmes in developed countries is law enforcement. Developed countries have strict laws and regulations as well as a certainty of law enforcement. The effectiveness of the institutional role in putting pressure on firms will determine the performance of environmental disclosures (Albertini, 2014). In addition, the public's environmental awareness in developed countries also contributes to force business organisations to adopt sustainability strategies such as environmental information disclosure.

Environmental Information Disclosure

Environmental disclosure in social accounting refers to the process of communicating environmental information through various reporting media (Ismail & Rahman, 2016), including in annual reports and sustainability reporting. This disclosure is a set of information about the firm's environmental activities and management in the past and future due to the firm's policy (Said, Omar, & Abdullah, 2013). Furthermore, the annual report is the frequently used medium to disclose environmental information. The contents of the disclosures cover a wide area, namely critical environmental issues, expenditures on environmental costs and policies (Iatridis, 2013). This information disclosure provides society insight regarding the firm's environmental protection programmes and conserving natural resources (Said et al, 2013).

Exposing environmental information to the public is a strategy to improve a firms image and reputation (Haji, 2013). It is a signal of the firm's transparency on environmental protection activities that have been undertaken (Iatridis, 2013). Furthermore, information disclosure provides insight for investors to assess the firm's environmental policy (Iatridis, 2013). Exposing environmental information to the public can reduce stock market information asymmetry and minimise investment risk by investors. Besides improving the firm's image and reputation, environmental disclosure provides benefits for lowering the firm's cost of capital. Also, the higher the level of disclosure, the more the cost of equity capital can be reduced. Therefore, information disclosure reduces environmental costs in the long term and enhances the company's image (Iatridis, 2013).

According to legitimacy theory, environmental disclosure is firm public exposure to create an environmentally friendly image and protect reputation (Hooghiemstra, 2000). When properly communicated, the practice can be an effective management strategy for the firms to develop and maintain good relationships with their stakeholders (Ullmann, 1985). Huang and Kung (2010) argued that disclosures are a firm mechanism to respond to their stakeholder's interest (Huang & Kung, 2010). Therefore, increasing concern about sustainable development issues makes stakeholders consider economic and environmental performance (Huang & Kung, 2010). Since customers prefer to buy product or services provided by environmentally friendly firms, disclosures are a marketing strategy to get impressions and attention from stakeholders.

Besides building firm image and reputation, disclosure is usually associated with responding to stakeholder pressure regarding environmental regulations (Brammer & Pavelin, 2006). Also, one of the motivations of the firms in conducting environmental disclosure is due to intense pressure from the stakeholders (Calza, Profumo, & Tutore, 2016). The government agencies are stakeholders that have a powerful influence to force the firm to adopt environmental protection measures. Furthermore, government agencies have the authority to discontinue the firm's operation when they violate environmental law and regulation, damage the quality of the environment, and pose a threat to the human population. Therefore, coercive power from the government is needed to ensure that environmental issues are getting priority and part of the firm's management strategies (Huang & Kung, 2010).

Research on environmental disclosure gain popularity since sustainability issues have become an international concern. Also, monumental movements initiated by the United Nations such as Agenda 21, Kyoto Protocol, Paris Agreement, Sustainability Development Goals (SDGs) have been inspiring scholars to study the behaviour of business organisations in supporting those movements. One of the popular methods to evaluate environmental protection activities conducted by the business organisation is using content analysis of the published environmental information. Meanwhile, Information in annual reports, sustainability reporting and company websites are frequently used by scholars to evaluate environmental protection activities performed by the firms.

In the Asia context, environmental disclosures have been studied in Indonesia, Malaysia, India, Bangladesh and China. Besides focusing on a single country, a study on environmental disclosure also involves multiple countries and across continents. Table 1 is a summary of previous studies that are related to environmental disclosure.

Table 1.
Previous Environmental Disclosure Studies

Authors	Country	Findings
Djajadikerta and Trireksani (2012)	Indonesia	The practice of environmental disclosure in Indonesia is still at an introduction phase
Gunawan et al. (2009)	Indonesia	Environmental sustainability information is least disclosed compared to human resources information
Suhardjanto et al. (2018)	Indonesia and Malaysia	There are no significant differences in environmental disclosure levels between Indonesian and Malaysian firms
Ahmad and Hossain (2015)	Malaysia	The practice of environmental disclosure for climate change is not an obligation for Malaysian firms
Ufere, Alias, Uche, and Onu (2017)	Malaysia	Marginal level of environmental disclosure in the property sector
Fatima et al. (2015)	Malaysia	The average quality of environmental disclosure is still low
Said et al. (2013)	Malaysia	The types of the industry determine the level of environmental disclosure
Kansal, Joshi, and Batra (2014)	India	Environmental and social disclosure is closely associated with firm size and industry type
Nurhayati, Taylor, and Tower (2015)	India	The average score for the environmental aspect is only 14%
Momin and Parker (2013)	Bangladesh	Environmental information disclosure is limited

Table 1. *(Continued)*
Previous Environmental Disclosure Studies

Authors	Country	Findings
Ullah, Hossain, and Yakub (2014)	Bangladesh	The level of environmental information disclosure is limited
Ane (2012)	China	The quality and quantity of environmental disclosure is limited
He and Loftus (2014)	China	The level of environmental disclosure is not associated with the sensitivity of the firms to the environment
Morhardt, Baird, and Freeman (2002)	Multiple Countries	The average environmental metric disclosure is 17%
Barkemeyer, Preuss, and Lee (2015)	Multiple Countries	The average score for the environmental aspect is 56%

In Southeast Asian regions, such as Indonesia and Malaysia, environmental information disclosure practices are not significantly different, which is relatively poor in terms of performance (Suhardjanto et al., 2018). In Indonesia, the study's finding suggested that the quantity of information disclosed is relatively low and only inform general environmental information (Djajadikerta & Trireksani, 2012). Gunawan et al. (2009) studied the social and environmental disclosure of Indonesian listed firms using content analysis of annual reports. The findings showed that social information related to human resources get more portion compared to environmental sustainability information. In Malaysia, Ahmad and Hossain (2015) found that the environmental aspect, especially for climate change information, is not mandatory for Malaysian companies to disclose. Even though some have already disclosed climate change information, most of them are still at their introductory stage. Ufere et al. (2017), who studied the real estate firms listed in the Malaysian capital market (Bursa Malaysia), found that level of environmental disclosure in the property sector is marginal. Furthermore, Suhardjanto et al. (2018) performed a comparative study between listed Indonesian and Malaysian firms on the agricultures and consumer goods sector. The findings showed that there are no significant differences between the two countries in terms of environmental information disclosed.

Global Reporting Initiative (GRI)

Environmental disclosure is part of the firm's accountability by providing information to the public. Similar to financial reporting, environmental reporting also has certain specific guidelines for compiling the reports. The institution that has been widely recognised in developing guidelines for preparing environmental reporting is the Global Reporting Initiative (de la Cuesta & Valor, 2013). The GRI is a non-governmental organisation concerned about environmental sustainability by providing reporting guidelines for participating organisations (Belkhir, Bernard, & Abdelgadir, 2017). Furthermore, the GRI guidelines are outputs that resulted from the collaboration between Organisation for Economic Cooperation and Development (OECD), the United Nations Environment Programme (UNEP), and the United Nations Global Compact (Belkhir et al., 2017). The mission of GRI is to regulate the standard practices of sustainability reporting of both private and government organisations. In addition, GRI provides a guideline for the firms to report economic, environmental and social information (Said et al., 2013). Even though the guidelines can be adopted in any organisation, the initial development was targeted for business (Belkhir et al., 2017). Also, the GRI is regularly updated by accommodating current sustainability issues, which makes it a reliable reference for policymakers and regulators. In Indonesia, the number of companies publishing sustainability reporting has increased significantly, and the majority adopt GRI as the primary reference (PWC, 2016).

Environmental information content in broad outline is classified into mandatory and voluntary (Ufere et al., 2017). The mandatory information is the subject of an environmental audit. Furthermore, the GRI provides guidance for the firms in preparing environmental disclosure and the basis for external parties to measure performance (GRI, 2013). The GRI guidelines also offer benefits for the user in terms of transparency, inclusiveness, auditability, completeness, relevance, sustainability, accuracy, neutrality, comparability and clarity (Belkhir et al., 2017; GRI, 2013). There are three big topics regulated in GRI, namely social, economic and environmental. The environmental topic consists of aspects related to material, energy, water, biodiversity, emissions, effluents and waste, environmental compliance and supplier environmental assessment. The details of primary indicators of each aspect are depicted in Table 2

Table 2.
GRI Environmental Aspects And Indicators

Environmental Aspects	**Primary Indicators**
Materials	Materials used, Recycled materials used, Reclaimed products and packaging materials
Energy	Energy consumption, Energy intensity, Reduction of energy consumption
Water	Water source, water recycled and reused
Biodiversity	Significant impacts of activities, Products, and services on biodiversity, Habitats protected or restored, IUCN Red List species and national conservation list species with habitats in areas affected by operations
Emission	GHG emissions, Reduction of GHG emissions, Emissions of ozone-depleting substances (ODS), Nitrogen oxides (NOX), sulphur oxides (SOX)
Effluents and Waste	Water discharge by quality and destination, waste by type and disposal method, Significant spills, Transport of hazardous waste, Water bodies affected by water discharges
Environmental Compliance	Non-compliance with environmental laws and regulations
Supplier and Environmental Assessment	Supplier environmental assessment, New suppliers that were screened using environmental criteria, Negative environmental impacts in the supply chain and action taken.

GRI has gained popularity among scholars conducting research related to corporate social and environmental responsibility topics. Unfortunately, previous studies mostly used an empirical approach rather than a descriptive one. It leads to a lack of details in exposing the environmental aspect as mentioned in GRI guidelines. Some of the previous studies that used a descriptive approach in understanding environmental disclosure were conducted by Clarkson, Overell, & Chapple (2011), Belkhir et al. (2017), and Chiarini (2017). Clarkson et al. (2011), who studied 51 Australian mining and manufacturing firms, found that emission disclosure is only under 50% of the total maximum score based on GRI guidelines. The results showed that relatively low environmental disclosure performance is also found in European countries such as Spain. GRI (2013) studied listed firms in Spain's capital market found that average environmental compliance on disclosing materials, energy water, biodiversity, emissions, effluents, and waste was 37%. Despite the poor performance of disclosure in the last ten years, however, there is recently a tendency for improvement. Chiarini (2017) studied supplier firms in European countries and found that the average score for disclosing material, energy, water, biodiversity, emissions, effluents, and waste was 53%. It implies a positive trend of environmental sustainability practice adopted by the business organisation in European countries.

3. Methodology

This study involved 135 listed manufacturing firms, and it represents 94% of the total population. Furthermore, a purposive sampling technique was used to determine the selected samples. Also, the measurement of environmental information disclosure refers to the GRI sustainability reporting standard version 4.0. The GRI guidelines have been widely used as an international standard for environmental reporting and assessment of social and environmental disclosures (de la Cuesta & Valor, 2013). The themes of environmental information disclosure and the number of items in each theme are summarised in Table 3 below

Table 3.
Items of Environmental Information Disclosure

Theme	Number of Environmental Items
Materials	3
Energy	5
Water	3
Biodiversity	4
Emissions	7
Effluents and Waste	5
Environmental Compliance	1
Supplier Environmental Assessment	2
Total Environmental disclosure items	30

The environmental information disclosure data were generated from annual reports and sustainability reporting issued for the year 2016. These reports are essential documents for stakeholders due to their credibility and can be openly accessed by the public (Said et al., 2013). Furthermore, the assessment of environmental information disclosure was conducted using content analysis of annual and sustainability reports. Content analysis refers to the process of identifying information, both qualitatively and quantitatively, using a particular document (Hooks and van Staden, 2011). This analysis was widely used by many researchers studying corporate social, economic and environmental disclosure (Hewaidy, 2016; Trireksani & Djajadikerta, 2016). The total annual and sustainability reports used were 130 (96%) and 5 (4%), respectively. Also, all items of GRI environmental reporting standards were confirmed with the information stated in annual and sustainability reports. The procedure of environmental disclosure assessment was conducted through information identification in annual and sustainability reports. Value 1 (one) is given when an environmental item corresponding to GRI was found, and Value 0 (zero) indicates not available. Also, a summary of the content analysis was presented using descriptive statistical analysis. The model for calculating environmental performance used the following formula:

$\text{EnPerf} = \frac{\sum xi}{\sum ni} \text{ x } 100\%$, where;

EnPerf = Environmental Performance

$\sum x_i$ = Total environmental information each theme disclosed

$\sum n_i$ = Total environmental information each theme based on the total sample

The sample consisted of 135 manufacturing firms listed on the Indonesia Stock Exchange (IDX) in 2016. The sample represented 93.7% of the total population, and it was classified into 19 manufacturing sectors. The details of the sample distribution based on manufacturing sector categorisation is presented in Table 4.

Table 4.
Sample Distribution

No	Manufacturing Sector	Total Sample	Percentage
1	Footwear	2	1%
2	Electronics	1	1%
3	Pharmaceuticals	9	7%
4	Cable	6	4%
5	Wood Industries	2	1%
6	Cosmetics and Household	5	4%
7	Food and Beverages	14	10%
8	Machinery and Equipment	2	1%
9	Automotive and Components	12	9%
10	Animal Feed	4	3%
11	Houseware	2	1%
12	Plastics and Packaging	12	9%
13	Pulp and Paper	9	7%
14	Tobacco Manufacturers	4	3%
15	Ceramics, Glass, Porcelain	5	4%
16	Chemicals	9	7%
17	Metals Products	16	12%
18	Cement	6	4%
19	Textile and Garments	15	11%
Total		135	100%

4. Findings and Discussion

Environmental Disclosure At A Glance

Environmental information disclosure in annual and sustainability reporting is voluntary for manufacturing firms in Indonesia. Furthermore, there are no specific regulations from authorities that regulate environmental information disclosure. However, growing attention from stakeholders towards the degradation of environmental quality has led to a massive environmental protection movement. Also, stakeholders expect business entities to have a profit motive orientation and contribute to environmental protection. Therefore, they need to be more transparent in providing information to the stakeholders regarding the firm's contribution to environmental protection efforts. Business entities in Indonesia widely use the GRI's sustainability reporting standards to disclose environmental information. The information presented in Table 4 showed the number of manufacturing firms that did or did not disclose environmental information for each theme. Overall, the number of manufacturing firms that disclosed this information is less than those that did not.

Table 5.
Information Disclosure Profile

Environmental Information Theme	**With Disclosure**		**No Disclosure**	
	Number of Firms	Percentage	Number of Firms	Percentage
Materials	45	33%	90	67%
Energy	49	36%	86	64%
Water	33	24%	102	76%
Biodiversity	53	39%	82	61%
Emissions	55	41%	80	59%
Effluents and Waste	87	64%	48	36%
Environmental Compliance	5	4%	130	96%
Supplier Environmental Assessment	7	5%	128	95%
Average	31%		69%	

The majority of manufacturing firms listed on the Indonesia Stock Exchange did not disclose environmental information. On average, only 31% of the selected sample disclosed environmental information in their annual or sustainability reporting. The information they disclosed the most was regarding effluents and waste (rank 1), emissions (rank 2), and biodiversity (rank 3). Meanwhile, the percentage of manufacturing firms not disclosing environmental information was 69%. The top three categories that were not disclosed are environmental compliance (rank 1), supplier environmental assessment (rank 2), and water (rank 3).

Performance Of Environmental Disclosure

In order to get a comprehensive understanding of the environmental information disclosure for each theme, presenting detailed information on the related items is necessary. The information outlined in Table 6 summarises the content analysis of environmental disclosure based on its themes. Meanwhile, the content analysis was conducted using the 30 items of sustainability reporting from version 4.0 by the GRI organisation.

Table 6.
Description of Environmental Disclosure

Themes and Items of Environmental Disclosure	**Items Disclosed**	**Environmental Performance**	**Average Environmental Performance**
Material			*14.6%*
Materials used by weight or volume	5	3.7%	
Recycled input materials used	37	27.4%	
Reclaimed products and their packaging materials	17	12.6%	

Table 6. *(Countinued)*
Description of Environmental Disclosure

Themes and Items of Environmental Disclosure	Items Disclosed	Environmental Performance	Average Environmental Performance
Energy			*15.3%*
Energy consumption within the organisation	7	5.2%	
Energy consumption outside of the organisation	3	2.2%	
Energy intensity	7	5.2%	
Reduction of energy consumption	43	31.9%	
Reductions in energy requirements of products and services	43	31.9%	
Water			*7.2%*
Water withdrawal by source	7	5.2%	
Water sources significantly affected by the withdrawal of water	7	5.2%	
Water recycled and reused	15	11.1%	
Biodiversity			*7.2%*
Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	3	2.2%	
Significant impacts of activities, products, and services on biodiversity	21	15.6%	
Habitats protected or restored	11	8.1%	
IUCN Red List species and national conservation list species with habitats in areas affected by operations	4	3.0%	
Emissions			*8.5%*
Direct GHG emissions	7	5.2%	
Energy indirect GHG emissions	7	5.2%	
Other indirect GHG emissions	3	2.2%	
GHG emissions intensity	3	2.2%	
Reduction of GHG emissions	55	40.7%	
Emissions of ozone-depleting substances (ODS)	3	2.2%	
Nitrogen oxides (NOX), sulphur oxides (SOX), and other significant air emissions	2	1.5%	
Effluents and Waste			*15.6%*
Water discharge by quality and destination	7	5.2%	
Waste by type and disposal method	35	25.9%	
Significant spills	3	2.2%	
Transport of hazardous Waste	55	40.7%	
Water bodies affected by water discharges	5	3.7%	
Environmental Compliance			*3.7%*
Non-compliance with environmental laws and regulations	5	3.7%	
Supplier Environmental Assessment			*3.3%*

New suppliers that were screened using environmental criteria	7	5.2%	
Negative environmental impacts in the supply chain and action taken	2	1.5%	
Total Average of Environmental Performance			*9.4%*

There are variations in terms of the performance level of each theme, and the average was 9.4% (Table 6). The result can be classified as low environmental performance compared to others, especially in developed countries. The highest score of environmental disclosure performance was for effluents and waste (15.6%), and the lowest was related to suppliers (3.3%). Also, the practice of environmental information disclosure tends to accommodate government rules and regulations. In addition, the firms tend not to disclose information that does not have a consequence from the government. The complete environmental performance level of each theme graphically is presented in Figure 1

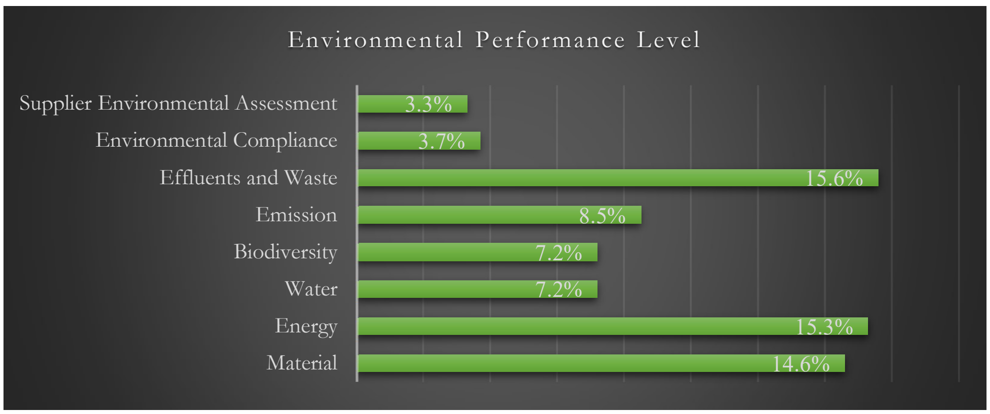

Figure 1.
Environmental Disclosure Performance Level

Based on the information presented in Figure 1, the practice of environmental information disclosure among manufacturing firms is focused on effluents and waste, energy, and material aspects (over 10%). Meanwhile, the disclosure related to suppliers, emissions, biodiversity, and water is relatively low (under 10%).

Discussion

The practice of environmental disclosure by manufacturing firms listed on the Indonesia Stock Exchange is relatively low (31%). This finding is in accordance with previous environmental disclosure studies. Gunawan et al. (2009) researched social and environmental disclosure in Indonesian listed firms from 2003 to 2006. The results showed that information related to social and environment is still relatively less exposed by listed firms. They argued that companies were still unsure of the benefits of practising social and environmental disclosures and were trying to find a better medium than the annual report. It is perceived that the most critical information to be disclosed is about products, while information about the environment is perceived as the least important Gunawan et al. (2009). Meanwhile, a study by Gunawan et al. (2009) showed that the production's factors, such as human resources information, have more portions disclosed in annual reports than environmental information. Furthermore, the research conducted by Djajadikerta and Trireksani (2012), which used website-based data instruments from the listed firms, showed similar results. The practice of environmental disclosure is low due to the lack of quantitative environmental information. Djajadikerta and Trireksani

(2012) argued that exposing environmental information to the public is still in early development, and insufficient socialisation from relevant authorities makes business organisations not understand the practice.

Indonesian authorities ensure that firms that conduct business activities related to natural resources need to disclose environmental information. However, Indonesia does not have specific guidelines regulating the forms and content of social and environmental reports for listed firms. Due to the lack of operational regulations, the practice of disclosures tends to vary between firms. Even though the ministry of environment and forestry has a PROPER program, participation is voluntary. Therefore, only a small number of listed firms participate in the program. In 2016, the listed manufacturing firm that participated in the program was 64 (40%) of 158 firms. In the future, mandatory involvement in the PROPER program for Indonesia listed firms is strongly recommended. In this case, a synergy between capital markets authority and the ministry of environment and forestry is crucial. Indonesia's capital market is categorised in inefficient form. Therefore, essential information such as environmental information disclosure will not be considered by investors as an important factor for investment decisions (Adisetiawan & Surono, 2016; Dewi, 2015). In order to increase the motivation of business organisations applying environmentally friendly business practices, the firms that have PROPER environmentally compliance predicate should be given incentives such as tax reduction. Also, because future sustainability will become a strategic issue, introducing a sustainability index in Indonesia's capital market is necessary. Therefore, the PROPER award should be considered by the capital market authority to develop a sustainability index.

The performance level of environmental information disclosures is still deficient (9.4%). The results of previous studies showed that there is a significant difference in terms of environmental performance. Handoyo (2018) studied using PROPER criteria found that environmental performance level reached 72% on average. The differences in terms of environmental criteria, the sample of the study and methodology of measurement may have caused different results between the two studies. However, what is most noticeable from that comparison is that the government has a powerful influence to force the organisation to comply with specific environmental issues. Furthermore, the organisations tend to obey environmental assessment criteria from the government rather than from GRI. This is indicated by the fact that every year firm's participation in the PROPER program tends to increase. In addition, the data of the PROPER program from 2011-2015 indicated that the number of participants increased by 17% on average (Handoyo, 2018).

The practices of environmental disclosures in Asia showed varied results but mainly indicated inadequate environmental disclosure. In Malaysia, Fatima et al. (2015), who researched environmentally sensitive companies listed on Malaysia Stock Exchange (Bursa Malaysia), showed that the disclosure quality is still low. This finding is in accordance with the research conducted by Ufere et al. (2017), who studied the real estate industry sector on the Malaysia Stock Exchange (Bursa Malaysia). Also, Suhardjanto et al. (2018) conducted a comparative study of social and environmental disclosures between Indonesia and Malaysia.

The results showed that between the two countries, there are no differences, and the tendency of environmental disclosure is relatively low. Ahmad and Hossain (2015) argued that environmental disclosure among Malaysian listed companies is still in its early development. Meanwhile, environmental reporting is voluntary in Malaysia, and there is no uniform standard used as guidelines for all business organisations (Said et al, 2013). Therefore, those conditions may have caused the practice of environmental disclosure in Malaysia to be relatively insufficient.

In China, Ane (2012) conducted an environmental disclosure study of heavy pollution industries registered in the capital market. The results showed that only a small number of firms disclosed environmental information, and the quality or quantity of information disclosed is insufficient. Furthermore, He and Loftus (2014), who researched environmentally sensitive companies registered in the China capital market, showed similar results with previous studies conducted by Ane (2012). This finding implies that firms that are considered to have a potential threat to environmental sustainability are not always associated with an intensity to disclose environmental information. Even though the results are pretty surprising, some arguments explained why environmental information disclosure in annual reports in China is relatively low. The Chinese listed companies prefer to expose environmental information in separate media such as sustainability reporting rather than annual reports (Cheng, Lin, & Wong, 2016). Sustainability reporting is designed to emphasise environmental and social aspects than financial aspects. Therefore, the firms tend to disclose more comprehensive environmental information in sustainability reporting than in an annual report.

In Bangladesh, Ullah et al. (2014) and Momin and Parker (2013) carried out an environmental disclosure study by focusing on listed companies in the capital market. The results showed that only 31% of listed textile companies made environmental information disclosures (Ullah et al., 2014). Furthermore, Momin and Parker (2013) studied social and environmental information disclosure of multi-national companies. The results showed that the disclosure practice in the Bangladesh capital market is limited in terms of quantity and quality of information reported. Also, the development of environmental information disclosure practices among listed companies in Bangladesh is relatively stagnant. The disclosure made in the 2000s showed the same trends as the 1990s (Ullah et al., 2014). It indicates that developing countries are relatively behind compared to advanced countries regarding concern for environmental issues. Therefore, stakeholders concern about environmental sustainability issues, especially the government, plays a pivotal role to force the firms to adopt an environmental sustainability strategy.

In India, Nurhayati et al. (2015) examined the practice of corporate social and environmental disclosure of textile and apparel firms listed on the Bombay Stock Exchange. The results showed that only 14% of the sample firms revealed social and environmental information in their annual report. Furthermore, Nurhayati et al. (2015) found that firm size and corporate governance performance influence the level of environmental disclosure. Due to resources advantage, larger-scale firms tend to disclose information better than the smaller scale (Nurhayati et al., 2015). Also, sound corporate governance principles enable the firms to balance accountability to shareholders and stakeholders. Kansal et al. (2014) studied the practice of corporate social responsibility disclosures by the top 100 companies listed on the Bombay Stock Exchange. Overall, the results showed that corporate social responsibility disclosures are low (Kansal et al., 2014). The findings of environmental information disclosure practice in India demonstrated the same results as findings in other developing countries in Asia. Overall, it can be concluded that the practice of disclosure by listed companies in India is inadequate.

Although environmental responsibility has been widely discussed, disclosure by firms in Indonesia and several other Asian countries is relatively low. In general, environmental disclosure is voluntary and has not been regulated by laws and regulations in most Asian countries, including Indonesia (Ismail & Rahman, 2016; Michelon, Pilonato, & Ricceri, 2015). Therefore, firms have the freedom to choose what and how to disclose information (Haji, 2013). The lack of urgency makes the practice among firms just a formality, and this condition causes the quality of disclosures is poor. Meanwhile, in some countries, disclosing environmental information is mandatory. However, the specific information to be disclosed is not regulated (Ismail & Rahman, 2016). The lack of regulations governing environmental disclosures allows firms to have too much flexibility in practising disclosure (Haji, 2013). Most countries do not have definite rules and regulations regarding the form and content of environmental reporting. Therefore, the incompleteness of disclosures is regularly found in practice (Michelon et al., 2015) and causes substantial differences in terms of the presented content (Said et al., 2013).

Environmental information disclosure studies are generally conducted using a checklist of information items under specific standards. Meanwhile, assessing environmental disclosures using checklists was criticised for not providing a sufficient quality of information (Michelon et al., 2015). The quality of information is helpful for investors to make a significant decision (Ismail & Rahman, 2016). Also, good quality environmental disclosures provide relevant values for decision making and enhance investor perceptions (Iatridis, 2013). Therefore, future research needs to move forward beyond revealing the quantity of environmental information disclosed in annual or sustainability reporting. Understanding the quality of environmental information is more beneficial to assist users, such as investors, for better decision making. Also, subsequent research needs to consider the characteristics of the company. Previous studies indicated that the characteristics of the firm influence both the quantity and quality of corporate environmental disclosure. In addition, Ufere et al. (2017) showed that market capitalisation is significantly correlated with the quantity and quality of environmental disclosure.

The findings have a solid message to society and stakeholders on responding to inadequate environmental disclosure among manufacturing firms in Indonesia. Customers need to consider environmentally friendly manufacturing practices as a preference to buy a product. Furthermore, society movements such as demanding "green products" will force manufacturing firms to consider environmental protection strategies in their business operation. By only producing "green products" and environmentally friendly manufacturing processes, the existence of the firms is legitimate. Also, investors, government agencies, and capital market authority are primary stakeholders expected to contribute more in promoting environmental sustainability goals initiated by United Nations (UN). Investors need to make a decision not only based on financial performance consideration but also environmental performance. Furthermore, including environmental performance on investment decision preference by investors will change firm orientation from only profit maximising to balance between financial and environmental performance.

The Indonesian government is relatively strict on law enforcement related to effluents and waste but less concerned with other aspects of environmental issues. Therefore, the absence of regulation from the government regarding violations of the supplier selection aspect makes the company less interested in the disclosure. The environmental performance levels for themes that are a priority programme of the government and backed up with strict rules and regulations are relatively high. Therefore, the government needs to prioritise aspects such as aspect-related material, energy, water, biodiversity, emissions, environmental compliance, and supplier environmental assessment to achieve sustainable development goals. The Indonesian capital market authority should also take part to promote environmental sustainability issues in business practice. In addition, the introduction of a sustainability index in the Indonesian capital market may affect business practices.

Comprehensive guidelines do not yet support the practice of environmental disclosure in Indonesia. Existing regulation only gives general guidelines for the firms to develop corporate social responsibility and environmental reporting. Therefore, the Institute of Indonesia Chartered Accountant (IAI) is expected to have an initiation to develop environmental reporting standards for the business organisation in the country. The regulation of environmental reporting standards has benefits for uniformity of reporting. Furthermore, using standard reporting guidelines, the environmental performance of the firms can be objectively compared. Also, GRI may offer a valuable reference to be adopted and adjusted with the condition in Indonesia for developing environmental reporting standards. As the official organisation that issues financial reporting standards, Indonesia Chartered Accountant (IAI) has coercive power to force a business organisation to adopt environmental reporting as an integral part of financial reporting. By doing this, environmental disclosure and reporting will become mandatory for a business organisation. Therefore, including environmental report as an integral part of financial reporting is expected to improve the apprehension of the business organisation on environmental sustainability.

5. Conclusion

The practice of environmental disclosure in the annual and sustainability reporting of listed manufacturing firms in Indonesia is relatively low (31%). Furthermore, the disclosure of manufacturing firms is voluntary. Therefore they do not have any obligation to disclose environmental information in their annual or sustainability reporting. The cost and benefits of the disclosure may be a consideration for the firms to disclose their environmental information. Meanwhile, the capital market tends to absorb essential information, such as financial information, rather than those related to the environment. Firms believe that environmental information disclosure may not have relevance for investors. Therefore, the disclosure in the annual and sustainability report is not necessary. Using GRI standards, the environmental performance level of listed manufacturing firms only reached 9.4%. In Indonesia, the practice of disclosure among listed firms is not regulated. Therefore, there is variation among firms in terms of the way information is disclosed. This may also explain why performance among manufacturing firms is deficient.

Environmental issues are a concern among various stakeholders who wish to achieve sustainable development goals. As a regulator, the Indonesian government needs to manage industrialisation to comply with environmental sustainability purposes. Therefore, regulations that cover environmental reporting for listed firms need to be introduced. Also, the practice of disclosure among listed firms should be made mandatory rather than voluntary. At present, there is no obligation for the firms to disclose environmental information to the public. The impact of this can be seen from the low participation of manufacturing firms. Furthermore, details of environmental disclosure regarding the reporting format and items need to be regulated. This may prevent variations of disclosure practice among the listed firms. Also, the standardisation of disclosure will make it possible to assess and compare the environmental disclosure performance between the firms. In order to increase the awareness of environmental issues to manufacturing firms, incentives and penalties mechanisms need to be introduced by the government. By doing this, the firms would be expected to have more concern for the environmental sustainability programme and openly disclose their information to the public.

Even though the study provides a picture of environmental performance and environmental compliance in Indonesia, the findings were limited to manufacturing firms only. Furthermore, the study only revealed using descriptive statistics and not involving an empirical modelling approach. As a consequence of that, the findings have a lack of understanding of its impact on business organisations. The effect of environmental performance and environmental compliance on business performance was simply neglected in this study. Therefore, further studies are suggested to empirically examine the impact of environmental performance and environmental compliance on business performance. Since environmental issues are relevant to any type of industry, the study sample in the future is suggested involving not only manufacturing firms but also other industries (multi sectors). A longitudinal study using panel data is also encouraged in order to have robust findings.

References

Adisetiawan, R., & Surono, Y. (2016). Indonesia Capital Market Efficiency. *British Journal of Economics, Finance and Management Sciences*, *11*(1), 108-121.

Ahmad, N. N. N., & Hossain, D. M. (2015). Climate change and global warming discourses and disclosures in the corporate annual reports: A study on the Malaysian companies. *Procedia-social and behavioral sciences*, *172*, 246-253.

Albertini, E. (2014). A descriptive analysis of environmental disclosure: A longitudinal study of French companies. *Journal of Business Ethics*, *121*(2), 233-254.

Amin, I., Zailani, S., & Rahman, M. K. (2020). Pro-Environmental Behaviours among Frontliner Employees in Oil and Gas Industry: Does Environmental Work Culture Really Matters?. *The Asian Journal of Technology Management*, *13*(2), 173-189.

Ane, P. (2012). An assessment of the quality of environmental information disclosure of corporation in China. *Systems Engineering Procedia*, *5*, 420-426.

Barkemeyer, R., Preuss, L., & Lee, L. (2015). On the effectiveness of private transnational governance regimes—Evaluating corporate sustainability reporting according to the Global Reporting Initiative. *Journal of World Business*, *50*(2), 312-325.

Belkhir, L., Bernard, S., & Abdelgadir, S. (2017). Does GRI reporting impact environmental sustainability? A cross-industry analysis of CO2 emissions performance between GRI-reporting and non-reporting companies. *Management of Environmental Quality: An International Journal, 28*(2), 138–155.

Brammer, S., & Pavelin, S. (2006). Voluntary environmental disclosures by large UK companies. *Journal of Business Finance & Accounting*, *33*(7-8), 1168-1188.

Calza, F., Profumo, G., & Tutore, I. (2016). Corporate ownership and environmental proactivity. *Business Strategy and the Environment*, *25*(6), 369-389.

Cheng, S., Lin, K. Z., & Wong, W. (2016). Corporate social responsibility reporting and firm performance: evidence from China. *Journal of Management & Governance*, *20*(3), 503-523.

Chiarini, A. (2017). Environmental policies for evaluating suppliers' performance based on GRI indicators. *Business Strategy and the Environment*, *26*(1), 98-111.

Clarkson, P. M., Overell, M. B., & Chapple, L. (2011). Environmental reporting and its relation to corporate environmental performance. *Abacus*, *47*(1), 27-60.

da Silva Monteiro, S. M., & Guzmán, B. A. (2010). The influence of the Portuguese environmental accounting standard on the environmental disclosures in the annual reports of large companies operating in Portugal: a first view (2002-2004). *Management of Environmental Quality: An International Journal, 21*(4), 414-435.

de la Cuesta, M., & Valor, C. (2013). Evaluation of the environmental, social and governance information disclosed by Spanish listed companies. *Social Responsibility Journal, 9*(2), 220–240.

Deswanto, R. B., & Siregar, S. V. (2018). The associations between environmental disclosures with financial performance, environmental performance, and firm value. *Social Responsibility Journal*, *14*(1), 180–193.

Dewi, D. M. (2015). The role of CSRD on company's financial performance and earnings response coefficient

(ERC). *Procedia-Social and Behavioral Sciences*, *211*, 541-549.

Djajadikerta, H. G., & Trireksani, T. (2012). Corporate social and environmental disclosure by Indonesian listed companies on their corporate web sites. *Journal of applied accounting research*, *13*(1), 21–36..

Eljayash, K. M. (2015). Documentation of environmental disclosure practices in the oil companies in the countries of the arab spring–some evidences from Egypt, Libya and Tunisia. *Journal of Economics, Business and Management*, *3*(10), 954-960.

Fatima, A. H., Abdullah, N., & Sulaiman, M. (2015). Environmental disclosure quality: examining the impact of the stock exchange of Malaysia's listing requirements. *Social Responsibility Journal*, *11*(4), 904–922.

GRI. (2013). Sustainability reporting policies worldwide: today's best practice, tomorrow's trends. Retrived from https://www.globalreporting.org/resourcelibrary/carrots-and-sticks.pdf

Gunawan, J., Djajadikerta, H., & Smith, M. (2009). An examination of corporate social disclosures in the annual reports of Indonesian listed companies. *Asia Pacific Centre for Environmental Accountability Journal*, *15*(1), 13-36.

Haji, A. A. (2013). Corporate social responsibility disclosures over time: evidence from Malaysia. *Managerial auditing journal*, *28*(7), 647–676.

Handoyo, S. (2018). The Development of Indonesia Environmental Performance and Environmental Compliance. *Journal of Accounting Auditing and Business*, *1*(1), 69-80.

He, C., & Loftus, J. (2014). Does environmental reporting reflect environmental performance? Evidence from China. *Pacific Accounting Review*, *26*(1), 134–154.

Hewaidy, A. M. (2016). Social and environmental disclosure in corporate annual reports: evidence from Kuwait. *International Journal of Social Sciences and Management*, *3*(1), 8-16.

Hooghiemstra, R. (2000). Corporate communication and impression management–new perspectives why companies engage in corporate social reporting. *Journal of business ethics*, *27*(1), 55-68.

Hooks, J., & van Staden, C. J. (2011). Evaluating environmental disclosures: The relationship between quality and extent measures. *The British Accounting Review*, *43*(3), 200-213.

Huang, C. L., & Kung, F. H. (2010). Drivers of environmental disclosure and stakeholder expectation: Evidence from Taiwan. *Journal of Business Ethics*, *96*(3), 435-451.

Iatridis, G. E. (2013). Environmental disclosure quality: Evidence on environmental performance, corporate governance and value relevance. *Emerging Markets Review*, *14*, 55-75.

Ismail, A. H., & Rahman, A. A. (2016). The quality of environmental disclosure in various reporting media of oil and gas companies in developing countries. *Corporate Ownership and Control*, *14*(1), 203-218.

Juhmani, O. (2014). Determinants of corporate social and environmental disclosure on websites: The case of Bahrain. *Universal Journal of Accounting and Finance*, *2*(4), 77-87.

Kansal, M., Joshi, M., & Batra, G. S. (2014). Determinants of corporate social responsibility disclosures: Evidence from India. *Advances in Accounting*, *30*(1), 217-229.

Karthikeyani, J., & Angalakshmi, N. (2013). Corporate Sustainability Reporting in Emerging Economies-A Review and Future Direction. *International Journal of Science and Research*, *2*(11), 252-256.

Kuo, L., & Chen, V. Y. J. (2013). Is environmental disclosure an effective strategy on establishment of environmental legitimacy for organization?. *Management Decision*, *51*(7), 1462–1487.

Lee, K. H. (2017). Does size matter? Evaluating corporate environmental disclosure in the Australian mining and metal industry: A combined approach of quantity and quality measurement. *Business Strategy and the Environment*, *26*(2), 209-223.

Michelon, G., Pilonato, S., & Ricceri, F. (2015). CSR reporting practices and the quality of disclosure: An empirical analysis. *Critical perspectives on accounting*, *33*, 59-78.

Momin, M. A., & Parker, L. D. (2013). Motivations for corporate social responsibility reporting by MNC subsidiaries in an emerging country: The case of Bangladesh. *The British Accounting Review*, *45*(3), 215-228.

Morhardt, J. E., Baird, S., & Freeman, K. (2002). Scoring corporate environmental and sustainability reports using GRI 2000, ISO 14031 and other criteria. *Corporate Social Responsibility and Environmental Management*, *9*(4), 215-233.

Nanggong, A. & Rahmatia. (2019). Perceived benefit, environmental concern and sustainable customer behavior on technology adoption. *The Asian Journal of Technology Management*, *12*(1), 31-47.

Nurhayati, R., Taylor, G., & Tower, G. (2015). Investigating social and environmental disclosure practices by listed Indian textile firms. *The Journal of Developing Areas*, *49*(6), 361-372.

Purnomo, P. K., & Widianingsih, L. P. (2012). The influence of environmental performance on financial performance with corporate social responsibility (CSR) disclosure as a moderating variable: evidence from listed companies in Indonesia. *Review of Integrative Business and Economics Research*, *1*(1), 57-69.

PWC. (2016). Sustainability Reporting: Global Reporting Initiative (GRI) G4. In *Sustainability Reporting: Global Reporting Initiative (GRI)*. Retrieved from www.pwc.com/id

Said, R., Omar, N., & Abdullah, W. N. (2013). Empirical investigations on boards, business characteristics, human capital and environmental reporting. *Social Responsibility Journal*, *9*(4), 534–553.

Semrau, T., Ambos, T., & Kraus, S. (2016). Entrepreneurial orientation and SME performance across societal cultures: An international study. *Journal of Business Research*, *69*(5), 1928-1932.

Setiadi, I., Rahmawati, Suhardjanto, D., & Djuminah. (2017). Board Independence, Environmental Disclosure, and Firm Value. *Review of Integrative Business and Economics Research*, *6*(4), 409-417.

Suhardjanto, D., Ashardianti, D., & Setiany, E. (2018). Environmental Disclosure in Agricultural Sector and Consumer Goods Annual Report (Comparison between Indonesia and Malaysia). *Review of Integrative Business and Economics Research*, *7*(4), 203-215.

Sulaiman, M., Abdullah, N., & Fatima, A. H. (2014). Determinants of environmental reporting quality in Malaysia. *International Journal of Economics, Management and Accounting*, *22*(1), 63-90.

Trireksani, T., & Djajadikerta, H. G. (2016). Corporate governance and environmental disclosure in the Indonesian mining industry. *Australasian Accounting, Business and Finance Journal*, *10*(1), 18–28.

Ufere, K. J., Alias, B., Uche, A. G., & Onu, U. J. (2017). The level of environmental disclosure in listed property sector companies. *International Journal of Real Estate Studies*, *11*(2), 85-92.

Ullah, M. H., Hossain, M. M., & Yakub, K. M. (2014). Environmental disclosure practices in annual report of the listed textile industries in Bangladesh. *Global Journal of Management and Business Research*, *14*(1), 97–108.

Ullmann, A. A. (1985). Data in search of a theory: A critical examination of the relationships among social performance, social disclosure, and economic performance of US firms. *Academy of management review*, *10*(3), 540-557.