

## THE MEDIATING ROLE OF ENVIRONMENTAL PERFORMANCE ON THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE MECHANISMS AND ENVIRONMENTAL DISCLOSURE

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### ABSTRACT

*Despite the growing number of environmental rules and regulations, there are relatively few studies that consider the whole association between environmental performance, corporate governance and environmental reporting. Therefore, the objectives of the study are to investigate the association between corporate governance and environmental disclosures quality and the mediating role of environmental performance in this relationship. Sample of study consists of 344 companies listed on Bursa Malaysia for the year of 2013. Environmental performance (EP) data were collected from the Malaysia Department of the Environment (DOE). Corporate Governance (CG) data were collected from the annual report of sample companies using corporate governance index based on Malaysian Code on Corporate Governance (MCCG). The results of study show that corporate governance is positively associated with environmental performance and its disclosure. The results also show that environmental performance partially mediates the relationship between corporate governance and environmental disclosure quality. This study serves as a valuable input to top management regarding the importance of corporate governance mechanisms towards the establishment of environmental related policies and strategies that help to improve environmental performance. The findings also provide an impetus for companies to develop specific abilities and resources in prioritised areas that are of a concern to relevant stakeholders.*

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**Keywords:** corporate governance, environmental performance, stakeholders' theory, voluntary environmental disclosure

## **INTRODUCTION**

Adverse environmental effect has become matter of great public concern throughout the world over recent decades. There have been concerns about the rate at which companies are extracting natural resources for production purpose. The fear is that if existing rate of resources depletion continues, the existence of the present and future generations will be compromised. Malaysia, as one of the fastest growing economies in the South-East Asia with rich natural resources, faces conflict between economic growth and protection of the environment. In Malaysia, environmental issues include the over-logging of primary forest resulting in the loss of wildlife habitats, soil erosion and the displacement of indigenous communities, air and water pollution from industry and urban transportation and the dumping of hazardous waste (Perry, Singh, & Unies, 2001). Al-Amin, Siwar, Jaafar and Mazumder (2007) suggest that toxic emission from industries and manufacturing sectors will increase significantly by the year 2020. Therefore, there is an increasing expectation of society toward businesses to be more responsible for their activities that harm the environment.

The stakeholders' concern about the quality of environment has motivated companies to employ more environmental friendly activities and operations. Thus, the environmental reports become an important means for corporations to communicate appropriate environmental concerns to different stakeholders and to demonstrate their CSR activities (O'Donovan, 2002). Subsequently, there is an increasing number of companies providing this information in their annual reports to inform stakeholders of companies activities that protect the environment (Uwugbe & Uadiale, 2011). However, the corporate environment disclosure (CED) as reported in annual reports does not necessarily depict the actual corporate environmental performance (CEP) (Romlah, 2005). In many countries, CED is a voluntary disclosure and past studies have cited reasons for companies to disclose this information such as to legitimise their existence, reduce agency problem and provide signal to potential investors. On the other hand, CEP is defined as the outcomes of companies' operation toward the environment, whether company complied or violated the laws and regulations related to the environment (Walls, Berrone, & Phan, 2012). The environmental disclosure practices of companies that comply with relevant laws and regulations are expected to be different compared to the disclosure practices of companies that violate the laws. Based on the stakeholder theory, this study proposes that companies that implement sound environmental policies or strategies will display good environmental performance

and have higher quality environmental disclosure by reporting detailed and easily verifiable information (Li, Richardson, & Thornton, 1997).

In Malaysia, as in many other countries, the disclosure of the corporate environmental information is still voluntary (Romlah & Sharifah, 2004). This explains the low level of disclosure and inconsistency among the reported information in the country (Ahmad & Sulaiman, 2004). Past literature show that the existence of effective corporate governance mechanism improves the quality of environmental disclosure (Buniamin, Alrazi, Johari, & Rahman, 2011; Oba & Fodio, 2012; Iatridis, 2013) and provides more transparent and reliable environmental information (Dunstan, 2008; Cormier, Ledoux, Magnan, & Aerts, 2010; Iatridis, 2013). Better disclosure also reduces agency problem and information asymmetry between manager and stakeholders (Iatridis, 2013). Furthermore, board of directors as the main component of corporate governance mechanism, decides and monitors the implementation of companies' strategies and policies including the environmental matters, to ensure that companies comply with environmental laws and regulations (Kesner, Victor, & Lamont, 1986; Lorsch & Young, 1990; Bai & Sarkis, 2010; Paloviita & Luoma-aho, 2010). So, it is expected that companies with effective corporate governance mechanism will exhibit better environmental performance (CEP) and this will lead companies to disclose environmental disclosure of higher quality. In other words, effective corporate governance mechanism improves CEP and this will inspire management of companies to provide better environmental disclosure. However, despite of the importance of CEP in influencing better disclosure, to the researchers' knowledge, there are no past studies that investigated the role of environmental performance as a mediating variable in the relationship between corporate governance and environmental disclosure quality (EDQ).

Accordingly, the main objective of the current research is to empirically investigate the mediating role of environmental performance in the relationship between corporate governance and the quality of corporate environmental disclosures in Malaysia. Specifically, the current research objectives are as follows:

1. To examine the relationship between corporate governance mechanisms and corporate EDQ among Malaysian listed companies.
2. To examine the relationship between corporate governance and environmental performance among Malaysian listed companies.
3. To examine the relationship between environmental performance and corporate environmental reporting of Malaysian companies.

4. To investigate the mediating role of environmental performance in the relationship between corporate governance mechanisms and corporate environmental disclosure quality.

The finding of study shows that good corporate governance leads to higher EDQ and environmental performance, and environmental performance is positively associated with EDQ. In other words, companies with effective corporate governance, which implemented environmental-friendly strategies in companies' operations, lead to better CEP, and disclose more informative and transparent environmental information.

This study provides further understanding of the importance of corporate governance mechanism in improving environmental performance and eventually environmental disclosure of higher quality. Corporate governance as an important corporate monitoring mechanism assists companies in implementing strategic environmental policies and decision making that reduces environmentally related penalties and noncompliance. Consequently, companies provide more detailed, transparent and informative disclosures regarding companies' environmental strategies that enhance the quality of environmental disclosure; hence, satisfying some of the most powerful stakeholders' needs.

## **LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES**

The concern for better corporate governance and social responsibility of companies in Malaysia is apparent when the government established the Malaysian Code on Corporate Governance and continuously improves the principles and terms of the Code. Additionally, the Malaysian CSR Framework established in 2006 is another instance in which CSR practices need to be communicated to various stakeholders (Sharifah, Bakhtiar, Nor, & Noor, 2008). However, regardless of the development and improvement in the corporate business environment, the effectiveness of better corporate governance toward social (environmental) performance and its disclosure is still questionable. Therefore, the fulfilment of various stakeholders' needs is still doubtful (Cormier, Ledoux, & Magnan, 2011). The next section discusses past empirical studies and the development of hypotheses of this study.

### **Corporate Governance (CG) and Environmental Disclosure Quality**

Corporate voluntary disclosure can reduce agency problem and information asymmetry, therefore preventing managers' opportunistic behaviour. In a way, disclosure is considered as one of the monitoring mechanisms to ensure

shareholder's wealth is maximised (Healy & Palepu, 2001; Cormier, Magnan, & Berthelot, 2003). Other corporate governance mechanisms, such as the existence of non-executive or independent directors, audit committee, and internal control, would also help to monitor managers' actions and decisions (Mitton, 2004). Thus, if effective monitoring mechanism is in place, managers would be more cautious about their actions and decisions, and this leads to the betterment of shareholders' wealth (Eisenhardt, 1989).

Past studies hypothesised that good corporate governance mechanism strengthens the environmental disclosure quality (Buniamin et al., 2011; Oba & Fodio, 2012; Iatridis, 2013) and provides more transparent and reliable environmental disclosure (Dunstan, 2008; Cormier et al., 2010, Iatridis, 2013). Good corporate governance also deters managers' opportunistic behaviour and manipulation of quality of environmental disclosure. However, past literature related to the impact of corporate governance on environmental disclosure quality in developed countries and developing countries (Buniamin et al., 2011; Jo & Harjoto, 2012; Kathy Rao, Tilt, & Lester, 2012; Michelon & Parbonetti, 2012; Oba & Fodio, 2012; Iatridis, 2013; Trireksani & Djajadikerta, 2016) lacks consistent pattern since these findings are influenced by different methodologies (Orlitzky, Schmidt, & Rynes, 2003). Most studies in this area measured corporate governance mechanism based on only a few components of CG that cannot effectively provide a complete measure of corporate governance effectiveness of a company (Cong & Freedman, 2011). This study fills in the gap in the literature by employing a complete and comprehensive measure of CG and condensing various corporate governance elements into a single governance index. Therefore, the first objective of this study is to re-examine the association between corporate governance and environmental disclosure quality by using a more comprehensive corporate governance index. Based on agency theory argument, it is predicted that good corporate governance mechanism will enhance environmental disclosure quality. Thus, the hypothesis is stated as follows:

H<sub>1</sub>: There is a positive association between level of corporate governance and the quality of environmental reporting.

### **Corporate Governance and Environmental Performance**

The changing nature of business environment and stakeholders' expectations have created a demand for companies to consider overall balanced strategy that takes into account various stakeholders' need, and at the same time to be competitive in sustaining the business. The increase in the stakeholders' concern on the quality of the environment has shifted companies' priorities, decisions

and strategies towards better environmental performance and the reporting of the performance. The existing body of literature clearly suggests that stakeholders play a significant role in a firm's sustainability efforts (Baden, Harwood, & Woodward, 2009; Delmas & Montiel, 2009; Paloviita & Luoma-aho, 2010) and critical to corporate performance and survival (Boesso & Kumar, 2007; Orij, 2010).

Stakeholder engagement influences the adoption of environmental and social practices and how much resources are allocated toward efforts that satisfy stakeholders (Bai & Sarkis, 2010; Paloviita & Luoma-aho, 2010). Thus, effective corporate governance mechanisms may fulfill some of the most stakeholders' needs. In this regard, the stakeholders' concern by quality of environment, has motivated companies to perform and employ more environmental friendly activities and operation.

Past literature argued that good corporate governance reduces the adverse impact of environmental related activities and eventually lessen the violation of environmental laws and regulations. Effective board members are influential in making critical decisions about environmental compliance and strategies; and therefore improve environmental performance. Board members, a part of corporate governance mechanisms, develop corporate strategy and policies and make decision to minimize environmental problem (Weir & Laing, 2001; Kassinis & Vafeas, 2002). Moreover, boards have the ability to ask experts and seek legal advice as an extra measure for ensuring sound environmental performance (Kassinis & Vafeas, 2002). Therefore, the likelihood that a company becomes the target in a lawsuit for its environmental performance may be due to its ineffective CG. Despite the growing number of environmental rules and regulations, there are relatively few studies that consider how corporate governance mechanisms influence environmental performance. Hence, based on above the arguments, the following is hypothesised:

H<sub>2</sub>: There is a positive relationship between level of corporate governance and environmental performance.

### **Environmental Performance and Environmental Disclosure Quality**

Research on the agency relationship between management and shareholders shows that managers who have better access to a company's information can reduce agency costs by making more disclosures and this will increase company value (Eisenhardt, 1989; Craswell & Taylor, 1992). Thus, based on agency

theory, disclosure can help to lessen several principle agent conflicts between management and shareholders by reducing information asymmetry.

Empirically, companies are motivated to disclose good news, and reluctant to report bad news. It follows that companies that have good environmental performance and implement sound environmental policies or strategies would likely prepare environmental disclosure in more detail in order to report to investors of their great environmental strategies (Li et al., 1997). These companies would disclose ‘hard’, which is verifiable and difficult to mimic environmental information (Al-Tuwaijri, Christensen, & Hughes, 2004). In contrast, poor environmental performers disclose minimum information required by regulation (Hughes, Anderson, & Golden, 2001) and tend to disclose ‘soft’ information, which is general in nature and not easy to verify environmental information (Clarkson, Overell, & Chapple, 2011). Thus, the disclosure of information may not be a reflective of the companies’ strategies and policies regarding the environment. Therefore, good environmental performers would favourably influence stakeholders’ perception and reduce doubt and uncertainty by reporting details of their environmental information. Thus, the third hypothesis is as follow:

H<sub>3</sub>: There is a positive association between environmental performance and environmental disclosure quality.

### **The Role of Environmental Performance in the Relationship between Corporate Governance Mechanisms and Environmental Disclosure Quality**

Past studies have established that companies with effective corporate governance have better environmental disclosure in their annual reports (Gul & Leung, 2004; Dunstan, 2008; Cormier et al., 2010; Buniamin et al., 2011; Oba & Fodio, 2012; Iatridis, 2013). Past studies also confirmed that corporate governance is positively associated with better environmental performance (Greeno, 1993; Weir & Laing, 2001). Findings of these studies suggested that effective corporate governance improves the quality of environmental disclosure, specifically for companies with better environmental performance.

Based on agency theory, corporate environmental disclosures help to lessen principal-agent conflicts and reduce information asymmetry. Effective corporate governance companies are responsive towards the needs of shareholders, therefore would disclose more environmental information (Gul & Leung, 2004; Dunstan, 2008; Cormier et al., 2010; Buniamin et al., 2011; Oba & Fodio, 2012; Iatridis, 2013). These companies would also comply with the appropriate state and federal laws which include environmental laws and regulations and implement



environmental friendly strategies in the companies' operations. Eventually, these companies will show better environmental performance.

Better environmental performance companies would likely to disclose environmental information to inform investors and other stakeholders of their achievement (Verrecchia, 1983). Companies will disclose detailed 'hard', quantifiable, verifiable and difficult to mimic environmental information (Al-Tuwajri et al., 2004). On the other hand, poor corporate governance companies would have less concern about social and environmental matters, and will likely violate some environmental laws. Therefore, companies will show poor environmental performance. These companies will disclose limited 'soft' information of general environmental policies and strategies such as waste reduction policy (Hughes et al., 2001).

In conclusion, effective corporate governance companies enhance the quality of environmental disclosure by providing more verifiable and quantifiable information. However, the level of disclosure depends on their environmental performance. This study proposes, companies that implement effective corporate governance mechanism will have policies to monitor and gauge environmental compliance and performance. In other words, effective corporate governance leads to better environmental performance and companies will disclose more information to stakeholders. However, poor corporate governance companies will show poor environmental performance and disclose less of this information in annual report. This means, the quality of environmental disclosure depends very much on the level of environmental performance (Fung, 2014).

Therefore, based on above arguments the following hypothesis is proposed:

- H<sub>4</sub>: Environmental performance mediates the association of corporate governance mechanisms and environmental disclosure quality.

## **RESEARCH METHODOLOGY**

This study conducts a cross-sectional research design for the year of 2013. The population of this study is made up of all public companies listed on the Main board of Bursa Malaysia for the year of 2013. Sample of this study was selected based on purposive sampling method since the initial list of companies was chosen from data provided by Department of Environment Malaysia (DOE) which comprised of non-compliant group of companies. Non-compliant companies



are those companies that received written warnings and/or charged in court (and found guilty) due to some violations of Malaysia Environmental Quality Act 1974 (Act 127) and Subsidiary Legislations. There are two main sources of noncompliant list of companies. The first source is from the DOE websites ([www.doe.gov.my](http://www.doe.gov.my)). In this case, the study gathers a list of listed and non-listed companies that were charged court and found guilty based on different type of offences under the Act from 1 January until 31 December 2013. Table 1 presents this information. The most repeated offence among the companies ( $n = 135$ ) was related to noncompliance with the *Environmental Quality (Industrial Effluent) Regulations 2009*. The second most noncompliance cases were connected to the discharge of black smoke greater than the specified standard ( $n = 94$ ). From the 338 companies listed in Table 1, only 46 of these companies are listed companies. These noncompliant companies were picked up to form the initial sample of this study.

The second source of noncompliant list of sample companies was collected by hand directly from the head office of the DOE in Putrajaya. These companies received written warnings/notices of various environmental offences during 2013. In total, 366 notices/warnings were served to listed companies. Some companies have more than one court cases and/or received more than one notices/warnings and this study considers the total number of these warnings as well as court cases. Therefore, based on these two sources of data, this study has identified 172 noncompliant listed companies in Malaysia for the year of 2013. These 172 companies formed the initial sample for the study. A matched pairs research design, based on industry classification and size of assets, was used to select the final sample of this study that comprises both compliant and non-compliant group of companies. The final sample comprises of 344 companies.

Table 1  
*Descriptive statistic for all environmental violations*

Offences	Type of offences	Section	Number of companies
Licensing	Prescribed premises which does not comply with terms of license	Sect. 16 (1)	58
	Prescribed premises operating without license	Sect. 18 (1)	3
	Prescribed conveyance operating without license	Sect. 18 (1) (a)	0
Air pollution	Open burning	Sect. 29 (A)	4
	Black smoke emission greater than specified standard	Sect. 22 (1)	94
Water pollution	Discharge effluent greater than specified standard	Sect. 25 (1)	8
Noise pollution	Emission of noise greater than specified conditions	Sect. 23 (1)	1
Scheduled waste	Scheduled waste	Sect. 34 (B)	2
Environmental impact assessment	Environmental impact assessment	Sect. 34 (A)	11
Other offences	Pollution of the soil	Sect. 24 (1)	0
	Failure of owner or occupier to install, operate, repair, etc.	Sect. 31 (1)	16
	Offences not provided with penalty	Sect. 41	0
	Discharge of oil into Malaysian water	Sect. 27 (1)	0
	Environmental quality (Clean Air Regulation) 1978	–	2
	Environmental quality (Prescribed Premises) (Scheduled Wastes Treatment & Disposal Facilities) Regulation 1989	–	0
	Environmental quality (Industrial Effluent) Regulations 2009	–	135
	Environmental quality (Sewage) Regulations 2009	–	4
	Failure of owner or occupier to furnish information	Sect. 37	0
Total			338

## **Definition and Measurement of Variables**

The dependent variable of this study, corporate environmental disclosure quality (EDQ), was gathered using content analysis of annual reports of sample companies. Specifically, this study analysed keywords related to the environment, such as ‘environmental management’, ‘environmental performance’, ‘environmental initiatives’, and other related keywords throughout the annual reports. This study has designed a content analysis index in order to provide a scoring system to measure the quality of environmental disclosure. The environmental disclosure index is based on the GRI guidelines as adopted by Clarkson, Li, Richardson, and Vasvari (2008) and Clarkson et al., (2011). The index consists of 70 equally weighted items and includes the following seven (7) classifications:

1. Governance structure and managerial systems (maximum score is 6).
2. Credibility (maximum score is 9).
3. Environmental performance indicators (maximum score is 36).
4. Environmental spending (maximum score is 3).
5. Vision and strategy claims (maximum score is 6).
6. Environmental profile (maximum score is 4).
7. Environmental initiatives (maximum score is 6).

A score of 1 is given if the disclosure is present, or 0 otherwise for each one of the items in categories (1), (2), (4), (5), (6) and (7). For category (3), there are six (6) checklist questions and the scoring scale per question ranges from 0 to 6. Category (3) relates to specific environmental performance disclosure indicators and carries more weight compared to other categories (Clarkson et al., 2011). The six check list questions are as follows:

1. Presentation of performance data.
2. Performance data are presented relative to peers, rivals or industry.
3. Performance data are presented relative to previous periods.
4. Performance data are presented relative to targets.
5. Performance data are presented both in absolute and normalised form.
6. Performance data are disaggregated (i.e. by plant or business unit).

For each indicator, a company can score a maximum of 6 points depending upon the nature of disclosure including the provision of various benchmarks.

Thus, the scoring of category (3) differs from the other categories whereby the provision of each item only achieves a score of 1.

The index consists of hard and soft disclosure items. Categories (1), (2), (3) and (4) contain hard disclosure items while soft disclosure items include categories of (5), (6) and (7). The scores calculated for each sample company are summed up and then divided by the maximum points available to assess a percentage score for each company. The score for all companies ranges between 0% and 100%.

Corporate governance (CG) variable is measured based on the corporate governance index introduced by Wahab, How and Verhoeven (2007). It was hand-collected from annual reports available on Bursa Malaysia website (<http://www.bursamalaysia.com>). This index provides a wide category of corporate governance features and we condensed them into one single measure. The index comprises of 30 provisions based on the MCCG 2012 principles and recommendations. The list of all 30 items is in Appendix. It is classified into two groups; the first (MCCG-PT2) relates to compliance with Part 2 of the MCCG, best practices<sup>1</sup> and 16 governance provisions; the second (MCCG-PT4) relates to the disclosure of governance practices recommended in Part 4 of MCCG, explanatory notes<sup>2</sup>. In a way, the index measures the overall corporate governance best practices of listed companies as recommended by the MCCG 2012. The index is based on just these two parts since Part (1) is compulsory for all listed companies and Part (3) is not addressed to public listed companies but mainly to institutional investors and auditors. The approach of scoring is additive, giving a measure of CG for firm  $i$  based on an equal weighting scheme used for the two parts (Wahab et al., 2007):

$$CG_i = \frac{MCCG\_PT2_i + MCCG\_PT4_i}{2} \times 100$$

Where  $MCCG\_PT2 = \frac{1}{6} \sum_{j=1}^{16} X_j$  and  $MCCG\_PT4 = \frac{1}{14} \sum_{j=1}^{14} Y_j$ . Here,  $X_j$  and  $Y_j$  are equal to 1 if the  $j$ th governance provision is adhered to and 0 if it is not, so that  $0 \leq CG_i \leq 100$ .

The environmental performance (EP) data were collected from the website of Department of Environment (DOE) Malaysia ([www.doe.gov.my](http://www.doe.gov.my)) as well as some direct information from the DOE Malaysia.

The environmental performance (EP) score is constructed based on modified Romlah (2005) which takes into account the severity of environmental problems caused by a company and its subsidiaries. The details of the score calculation are as follows:

Score 0: When a company does not have any non-compliance issue with regard to the Environmental Quality Act 1974 (Act 127) & Subsidiary Legislations. Therefore, this company is considered as a good environmental performance company.

Score (1): When a company received a written warning/notice from the DOE for non-compliance with regard to the Act in certain aspects of its operation. The company is also given a certain time frame to correct their environmental performance.

Score (2): When a company is charged and found guilty by the court for a more severe environmental issue. The higher score is given here because this type of noncompliance issue (court cases) is considered more serious (Romlah, 2005).

Specifically, the total score is calculated based on the severity of environmental problems caused by a company as follow:

$$EP_i = -(W_i + 2CC_i)$$

Where, EP = Environmental performance, W = warning and CC = court cases.

As an illustration to calculate the EP score, let us assume that a company is given two warnings for some noncompliance problems and its subsidiary is charged in court for another noncompliance issue. Therefore, the EP score for this company is (-4) calculated as follows:  $EP = -(2 \text{ (warnings)} + 2 \text{ (court case)}) = -4$ . Based on this formula, if a company gets a high negative score, it means that the environmental performance of the company is poor. On the other hand, if a company gets a zero EP score, it means that the company's environmental performance is good, because it does not have any record of noncompliance with environmental laws.

This study also incorporates a few control variables that have been documented in the past to influence environmental disclosure as well as environmental performance of companies. The control variables consist of company's size (total assets), profitability (return on assets), leverage (ratio of debt to total assets); industry (1 = environmentally sensitive industries, 0 otherwise), capital spending (ratio of capital expenditure to total revenue); audit quality (1 = company is audited by Big4 audit firm, 0 otherwise). The financial information of these control variables was obtained from the Osiris data base and annual reports.

### Model Specification

This study uses regression analysis to test research models. Specifically, the following four research models are developed:

$$EDQ_{it} = \alpha_0 + \alpha_1 CG_{it} + \alpha_2 AUDITQ_{it} + \alpha_3 CAPIN_{it} + \alpha_4 INDUSTRY_{it} + \alpha_5 LEV_{it} + \alpha_6 ROA_{it} + \alpha_7 LnSIZE_{it} + \epsilon_{it} \quad (1)$$

$$EP_{it} = \alpha_0 + \alpha_1 CG_{it} + \alpha_2 AUDITQ_{it} + \alpha_3 CAPIN_{it} + \alpha_4 INDUSTRY_{it} + \alpha_5 LEV_{it} + \alpha_6 ROA_{it} + \alpha_7 LnSIZE_{it} + \epsilon_{it} \quad (2)$$

$$EDQ_{it} = \alpha_0 + \alpha_1 EP_{it} + \alpha_2 AUDITQ_{it} + \alpha_3 CAPIN_{it} + \alpha_4 INDUSTRY_{it} + \alpha_5 LEV_{it} + \alpha_6 ROA_{it} + \alpha_7 LnSIZE_{it} + \epsilon_{it} \quad (3)$$

$$EDQ_{it} = \alpha_0 + \alpha_1 CG_{it} + \alpha_2 EP_{it} + \alpha_3 AUDITQ_{it} + \alpha_4 CAPIN_{it} + \alpha_5 INDUSTRY_{it} + \alpha_6 LEV_{it} + \alpha_7 ROA_{it} + \alpha_8 LnSIZE_{it} + \epsilon_{it} \quad (4)$$

Where:

EDQ	=	Environmental Disclosure Quality;
CG	=	Corporate Governance;
EP	=	Environmental Performance;
CAPIN	=	Capital Spending/total revenue
LEV	=	Ratio of debt to total assets;
ROA	=	Return on Assets;
Ln SIZE	=	Ln Total Assets;
INDUSTRY	=	dummy variable; 1 for environmentally sensitive industries <sup>3</sup> , 0 otherwise
AUDITQ	=	dummy variable; 1 if company is audited by Big4 audit firm, 0 otherwise
$\epsilon$	=	Error term (Residual).

### FINDINGS

Table 2 presents the descriptive statistics for environmental disclosure quality variable based on *hard* and *soft* disclosure items. In general, companies tend to disclose more *soft* disclosure items compared to *hard* disclosure items, because soft disclosure items are always general in nature and easy to mimic. Based on Table 2, 96.51% of sample companies disclosed about "vision and strategy claim" related to the environment. This is a very general statement as many companies can have vision and mission statements related to the environment. On the other hand,

the hard disclosure items are based on some objectives, as well as quantifiable and verifiable corporate environmental information. This information cannot easily be reproduced by other companies.

Table 2  
*Descriptive statistics of environmental disclosure quality (EDQ) (n = 344)*

Type of disclosure	Categories	Number of companies	Percentage of companies	Score			
				Mean	Minimum	Maximum	
Hard items	A1	Governance structure and managerial systems	135	39.24	0.594	0	6
	A2	Credibility	106	30.81	0.621	0	8
	A3	Environmental performance indicators	38	11.04	0.651	0	18
	A4	Environmental spending	59	17.15	0.215	0	3
Soft items	A5	Vision and strategy claims	332	96.51	3.490	1	6
	A6	Environmental profile	287	83.43	1.093	0	4
	A7	Environmental initiatives	321	93.31	3.212	0	6

Figure 1 depicts the information presented in Table 2 by using graph. As shown in the Figure 1, the percentage of sample companies that disclose soft disclosure categories (A5–A7) is higher than hard disclosure categories (A1–A4). In other words, Malaysian companies disclose more basic, general and not easy to verify environmental information.

This study also gathers additional noncompliance data from DOE with regard to written warning/notices for other environmental offences. In total, there are 366 notices and 46 court cases served to listed companies. Some companies have more than one court cases and/or received more than one notices/warnings. Table 3 presents summary of this information. This table indicates that the majority of court cases and warnings/notices are of companies from industrial product sector (32.62% and 23.91%) and the lowest are from the property sector. There are 34 companies that have both court cases and notices/warnings.



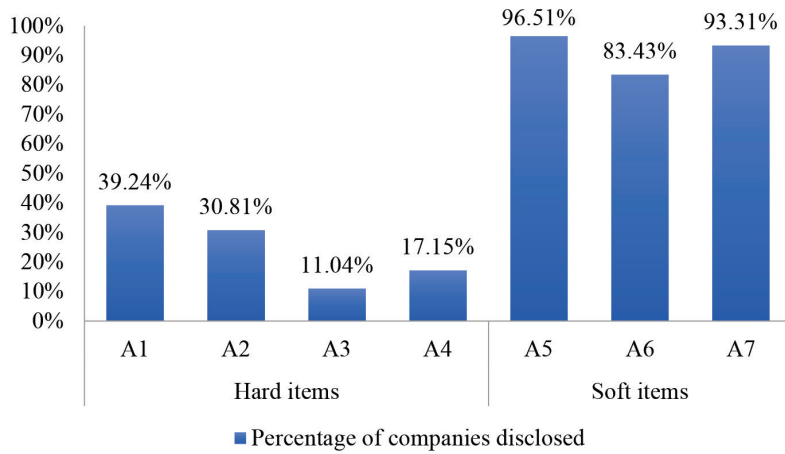


Figure 1. Environmental disclosure quality (hard and soft disclosure)

Table 3  
Environmental performance components based on industry

Industry sector	Court cases		Notices/warnings	
	Number of cases (%)	Number of companies (%)	Number of cases (%)	Number of companies (%)
Industrial product	15 (33)	10 (29)	117 (32)	66 (40)
Plantation	11 (24)	7 (21)	97 (27)	20 (12)
Trading-services	11 (24)	9 (26)	97 (27)	44 (27)
Consumer products	8 (17)	7 (21)	43 (11)	29 (18)
Construction	1 (2)	1 (3)	7 (2)	2 (1)
Property	0 (0)	0 (0)	5 (1)	4 (2)
Total	46 (100)	34 (100)	366 (100)	165 (100)

Table 4 presents summary of descriptive statistics of all research variables used in this study. The average percentage of environmental disclosure quality (EDQ) is 18.07 out of 100, with a maximum score of 55.71. This indicates that the level of voluntary environmental disclosure in Malaysia is low. Table 4 also displays the level of corporate governance score, including its two components. The highest CG score is 90.18 while the lowest is 3.13 and the mean of CG score is 64.72. The mean of first sub component score of CG, MCCG-PT2, is 30.02 and the second subcomponent, MCCG-PT4, is 27.35.

Table 4  
Descriptive statistics for the research variables

Continuous Variables	Minimum	Maximum	Mean	Standard Deviation
EDQ (%)	1.43	55.71	18.07	14.02
Corporate Governance				
CG (%)	3.13	90.18	64.72	12.14
MCCG-PT2 (%)	6.25	93.75	30.02	7.74
MCCG-PT4 (%)	0.00	92.86	27.35	7.90
Environmental Performance				
EP score	-17.00	0.00	-1.29	2.34
Court Cases score	-4.00	0.00	-2.16	0.55
Warnings score	-15.00	0.00	-2.09	2.31
Firm Characteristics				
ROA (%)	-35.40	34.60	4.69	7.57
LEV	0.00	0.96	0.38	0.20
CAPIN	0.00	0.89	0.12	0.20
Ln SIZE	10.22	18.42	13.31	1.70
Dichotomous Variables				
INDUSTRY	12.40	87.60		
AUDITQ	47.90	52.10		

Notes: EDQ score= Environmental Disclosure Quality; CG = Corporate Governance; MCCG-P2 = First component measure of CG; MCCG-P4 = Second component measure of CG; EP = Environmental Performance; Court Cases Score= The number of Court Cases multiply by (-2); Warnings Score = The number of notices multiply by (-1); ROA = Return on Assets; LEV = Ratio of debt to assets; CAPIN = Capital Spending/Total Revenue at the end of fiscal year; Ln SIZE = Ln Total Assets; INDUSTRY = Industry as dummy variable given the value of 1 if the company belongs to high environmentally sensitive industries and 0 otherwise; AUDITQ = Audit Quality as dummy variable given the value of 1 if the company is audited by Big4 audit firm and 0 otherwise.

The environmental performance (EP) score and its components, court cases and warnings scores, are also displayed in Table 4. The minimum score of court cases and warnings are -4 and -15 respectively. These scores indicate that there is a company that has been charged twice in court and/or received 15 notices/warnings from DOE for noncompliance of environmental regulations. In addition, the vast majority of the sample companies (87.60%) are from environmentally sensitive industries and almost half of companies (52.10%) are audited by Big4 audit firms.

Table 5 presents Pearson correlation matrixes of dependent variables and independents variables. According to Table 5, there are positive correlations

between all dependent and independent variables. These preliminary findings indicate that there is a possibility that H<sub>1</sub>–H<sub>3</sub> is supported. Table 5 also shows that the highest correlation coefficient is between SIZE and EDQ (0.261). Such a positive and strong correlation between these two variables is expected since large companies can provide additional costs of delivering environmental disclosure, incline to adopt highly-skilled abilities and expertise and have complex reporting systems to offer comprehensive disclosures (da Silva Monteiro & Aibar-Guzmán, 2010). In addition, Table 5 illustrates that there is no collinearity issues among independent variables since the pairwise correlation between variables does not exceed 0.8 (Gujarati, 2003). Therefore, based on the Pearson correlation result, the observed correlation between variables is not considered as a problem in the interpretation of the results of multivariate analysis.

Table 5  
Correlation matrix

	EDQ	CG	EP	ROA	LEV	CAPIN	INDUSTRY	AUDITQ	Ln SIZE
EDQ	1								
CG	0.203**	1							
	0.000								
EP	0.161**	0.135*	1						
ROA	0.214**	0.049	0.007	1					
LEV	0.077	0.041	-0.021	-0.177	1				
CAPIN	0.255**	-0.008	0.175**	0.048	-0.056	1			
INDUSTRY	-0.207	-0.048	-0.113	0.018	-0.082	-0.186	1		
AUDITQ	0.132*	0.082	0.152**	0.147**	0.051	0.180**	-0.105	1	
Ln SIZE	0.261**	-0.008	0.035	0.077	0.231**	0.122*	-0.111	0.177**	1

\*\* Correlation is significant at the 0.01 level (2-tailed); \* Correlation is significant at the 0.05 level (2-tailed)

## Results of Regression Analysis

The results of the regression analysis to test all four hypotheses are presented in Table 6. The first hypothesis (H<sub>1</sub>), to investigate the association between corporate governance (CG) and environmental disclosure quality (EDQ) (Model 1), shows that CG is significantly and positively associated with EDQ ( $\beta = 0.216$ ,  $t = 2.614$ ). The results indicate an adjusted R<sup>2</sup> of 20.40%, F = 13.667, and  $p < 0.000$ .

These findings suggest that companies that have effective corporate governance mechanism are likely to have higher quality environmental disclosure. Effective corporate governance mechanism provides monitoring for more transparent and informative disclosure in order to lessen the possible conflicts of interests and opportunistic behaviour between managers and stakeholders. In other words, high quality environmental disclosure would close the information gap between managers and stakeholders. The outcomes support prior empirical studies (Ajinkya, Bhojraj, & Sengupta, 2005; Dunstan, 2008; Cormier et al., 2010) that CG is positively and significantly associated with EDQ. The finding is also in line with agency theory proposal that sound corporate governance mechanism can assist to mitigate various principal-agent conflicts through transparent and high quality environmental disclosure.

Table 6 also shows the regression results for second hypothesis ( $H_2$ ), which is to investigate the association between corporate governance and environmental performance (EP) (Model 2). The results show that corporate governance is significantly and positively associated with environmental performance EDQ ( $\beta = 0.0.24$ ,  $p < 0.01$ ). The adjusted  $R^2$  is 4.80%,  $F = 3.483$ , and  $p < 0.000$ .

The findings indicate that companies with effective corporate governance would prevent adverse environmental effect from corporate business activities. Effective corporate governance helps to develop environmental-friendly strategies, which aligned with stakeholders' needs, in order to meet environmental regulatory standards.

Environmental-friendly decisions and strategies assist companies' operations toward good environmental performance. Explicitly, companies establish procedures, such as utilising and reviewing appropriate internal control systems, monitoring compliance with legal requirements and adopting widely accepted practices regarding material environmental issues (e.g. disposal of waste) to ensure compliance with environmental regulations and avoid litigation risks, fines or penalties or damage to their reputation. Therefore, the likelihood that a company becomes the target in a lawsuit for its non-compliance with environmental regulations is decreased. As a result, effective corporate governance that acts in a more responsive manner leads to less violation of environmental regulations that positively influences environmental performance. The findings substantiate few prior studies (Haniffa & Cooke, 2002; Iatridis, 2013) that the existence of good corporate governance would lead companies to adopt socially acceptable policies and to better serve stakeholders' interests, including environmental protection.

Table 6 also shows results of regression analysis to test the third hypothesis ( $H_3$ ), which investigates the association between environmental performance and

environmental disclosure quality (Model 3). Consistent with our expectation ( $H_3$ ), there is a significant and positive association between environmental performance and environmental disclosure quality EDQ ( $\beta = 0.646$ ,  $p < 0.05$ ). The adjusted  $R^2$  is 17.97%,  $F = 11.857$ , and  $p < 0.000$ .

These findings indicate that companies that have adopted environmental-friendly strategies and have good environmental performance tend to provide environmental disclosure in more details to inform investors of their great environmental strategies. In this respect, companies would prefer to disclose more quantifiable data like energy/water consumption or carbon emission. In other words, companies would present themselves through disclosing “hard” items. Thus, providing clearer and informative disclosure regarding companies’ environmental strategies, which would reduce the information gap between managers and stakeholders. Disclosure can help to lessen several principal agent conflicts through reduced information asymmetry. The outcomes support prior studies such as (Al-Tuwaijri et al., 2004; Clarkson et al., 2011) that companies with superior environmental performance would prefer to differentiate themselves through their environmental reporting. In other words, good environmental performers would prefer to disclose “hard”, which is verifiable and difficult to mimic information (Al-Tuwaijri et al., 2004).

The fourth hypothesis investigates whether environmental performance variable mediates the association between corporate governance and environmental disclosure quality. This hypothesis is examined following three steps (Baron & Kenny, 1986).

In the first step, the independent variable needs to be significantly associated with dependent variable (Total effect  $\neq 0$ ). The results presented in Table 6 fulfill this requirement when the finding shows that the independent variable, corporate governance, is significantly associated with the dependent variable, environmental disclosure quality EDQ ( $\beta = 0.216$ ,  $p < 0.01$ ).

The second step is to test if independent variable is significantly associated with mediator variable (Indirect effect ( $a$ )  $\neq 0$ ). The results shown in Table 6 show that the independent variable, corporate governance, is associated with mediator variable, environmental performance EDQ ( $\beta = 0.024$ ,  $p < 0.01$ ). Therefore, the requirement for second step is fulfilled.

Table 6  
Results of regression analysis for all specified models (n = 344)

Variables	EDQ	EP	EDQ	EDQ
	Model 1	Model 2	Model 3	Model 4
Constant	-18.520** (-2.349)	-2.700* (-1.884)	-3.191 (-0.473)	-17.143** (-2.109)
AUDITQ	-0.070 (-0.054)	0.539** (1.992)	-0.040 (-0.030)	-0.345 (-0.265)
CAPIN	14.734*** (3.348)	1.539*** (5.492)	13.510*** (2.933)	13.949*** (3.121)
INDUSTRY	-5.408** (-2.149)	-0.534** (-2.315)	-5.396** (-2.063)	-5.136** (-2.025)
LEV	4.495 (1.244)	-0.493 (-0.971)	5.438 (1.499)	4.747 (1.325)
ROA	0.364*** (3.691)	-0.009 (-0.447)	0.387*** (4.003)	0.369*** (3.815)
Ln SIZE	1.681*** (3.909)	0.004 (0.045)	1.618*** (3.559)	1.678*** (3.846)
CG	0.216*** (2.614)	0.024*** (2.590)		0.204** (2.457)
EP			0.646** (2.205)	0.510* (1.746)
R-squared	0.220	0.067	0.196	0.226
Adjusted R-squared	0.204	0.048	0.179	0.208
F-statistic	13.667	3.483	11.857	12.402
Prob (F-statistics)	0.000	0.000	0.000	0.000

Notes: Standardised coefficients are reported, with t values in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

In the third step, the mediating variable needs to be significantly associated with dependent variable after controlling the independent variable (Indirect effect (b)  $\neq 0$ ). The results shown in Table 6 indicate that the mediator variable, environmental performance has significant and positive association with dependent variable, environmental disclosure quality, after controlling for the effect of independent variable, corporate governance EDQ ( $\beta = 0.510$ ,  $p < 0.10$ ).

Thus, this study fulfills all the three steps required for mediating test based on ‘casual steps’ approach developed by Baron and Kenny (1986). As a result, the results are consistent with fourth hypothesis ( $H_4$ ) that environmental performance mediates the association of corporate governance and environmental

disclosure quality. Table 7 shows the summary of the estimated results for these three steps in Malaysia.

Table 7  
Summaries of statistical steps for mediation analysis

Steps	Dependent variables	Independent variables	Coefficient	Coefficient value
First step	EDQ	CG	Total effect (c)	0.216***
Second step	EP	CG	Indirect effect ( $\alpha$ )	0.024***
Third step	EDQ	EP & CG	Indirect effect (b)	0.510*
			Direct effect ( $\acute{c}$ )	0.204**

The summary shown in Table 7 provides several descriptions. First, there is a positive and significant indirect effect of ( $\alpha$ ) and (b), between corporate governance and environmental disclosure quality in Malaysia. Second, the direct effect ( $\acute{c}$ ) between corporate governance and environmental disclosure quality remains significant after controlling for environmental performance. Third, the absolute value of direct effect ( $\acute{c}$ ) is smaller than total effect (c) in Malaysia ( $0.204 < 0.216$ ), suggesting that environmental performance partially mediates the association between corporate governance and environmental disclosure quality. Overall, the results and estimated coefficients support the fourth hypothesis ( $H_4$ ); hence, indicating that environmental performance partially mediates the association between corporate governance and environmental disclosure quality. The findings indicate that companies that implement effective corporate governance mechanism would most likely monitor the environmental issues to ensure compliance with laws and regulations related to the environmental protection. This will cause companies to have better environmental performance. Subsequently, good environmental performance companies disclose this information in a more quantitative manner that leads to better quality disclosure since this disclosure is more objective and can be verified. This form of ‘hard’ disclosure is difficult to be imitated and can only be made possible if companies are in good term with the environment.

Table 6 shows that most control variables show significant relationship with dependent variables. Capital intensity (CAPIN) is positively and significantly associated with EDQ (as shown in Model (1), (3) and (4)). This finding is consistent with past studies such as Clarkson et al. (2008; 2011) that companies with higher capital spending are expected to have newer and more environmental friendly equipment to employ cleaner and less polluting technologies. This will



result in companies to have better environmental performance and disclose this information in their annual reports.

Table 6 also indicates that Return on Assets (ROA) is positively and significantly associated with EDQ (as shown in Model (1), (3) and (4)). The finding is consistent with past studies that profitable companies tend to provide high quality disclosures because they have more resources to do so (Al-Tuwaijri et al., 2004; Haniffa & Cooke, 2005; Villiers & Staden, 2010). However, the result indicates that there is no significant relationship between ROA and EP.

Table 6 also reveals that companies' Size (SIZE) has positive and significant association with EDQ (as shown in Model (1), (3) and (4)). The finding is also consistent with prior studies (Deegan & Gordon, 1996; Adams, Hill, & Roberts, 1998; Gray, Javad, Power, & Sinclair, 2001; Ho & Wong, 2001; Patten, 2002; Eng & Mak, 2003; Gul & Leung, 2004; Cormier, Magnan, & Velthoven, 2005; Lakhali, 2005; Magness, 2006; Brammer, Millington, & Rayton, 2007; Donnelly & Mulcahy, 2008; Cormier et al., 2011; Rupley, Brown, & Marshall, 2012) that large companies tend to be more concern about their corporate environmental image and reputation; since they are more visible to external stakeholders. However, the result shows that there is no significant relationship between companies' SIZE and EP.

Moreover, consistent with prior studies (Frost & Wilmshurst, 2000; Qian & Schaltegger, 2013), type of industry (INDUSTRY) is negatively associated with the quality of environmental disclosure (as shown in Model (1), (3) and (4)). Companies in environmentally sensitive industries face more environmental issues and under higher stakeholders' pressure and therefore disclose less information. Table 6 also indicates that type of industry (INDUSRTY) is negatively and significantly associated with environmental performance (as shown in Model (2)). Companies that deal with serious environmental issues, have more environmental violations of environmental regulation which can lead to poorer environmental performance. This finding is consistent with past studies such as (Deegan & Gordon, 1996; Qian & Schaltegger, 2013).

Moreover, audit quality (AUDITQ) has a positive and significant association with environmental performance (as shown in Model (2)). Past studies also argued that companies that are audited by Big4 audit firms have better audit quality that may help clients to prepare annual reports with more financial and non-financial information, including better environmental information (Qiu & Srikant, 2004; Gupta & Nayar, 2007).

## **CONCLUSION**

This study examines the association between corporate governance, environmental performance and environmental disclosure quality of sample companies listed on the Main board of Bursa Malaysia for the year of 2013. Environmental disclosure variable is measured based on modified GRI-based disclosure index developed by Clarkson et al. (2008). Meanwhile, the corporate governance variable is measured based on corporate governance index which incorporates a wide category of corporate governance features and they are condensed into one single measure (Wahab et al., 2007).

The findings of this study add to the literature that high quality environmental disclosure is a result of an effective corporate governance mechanism's strategies and policies. This study highlights the important role of corporate governance as a monitoring mechanism and in reducing the information asymmetry as well as implicating the environmental decisions and strategies within companies. Thus, environmental disclosure can be reflected as a means toward undertaking sound corporate governance that incorporates accountability and responsibility in companies' environmental strategies and policies. This study is beneficial for policy makers by recognising the important role of environmental performance and how it can affect the quality of environmental disclosure. Environmental performance can be related to the variances of environmental strategies and environmental damages undertaken by companies, which influence the quality of environmental disclosure. Moreover, considering the significant role of outcome of environmental friendly policies in enhancing the quality of environmental reporting, they would assist regulators in formulating more efficient environmental standards.

While the results of this study contribute to better understanding of the role of corporate governance towards the betterment of environmental performance and disclosure quality, one main limitation of the research is acknowledged. This study focuses on a single year study. A more comprehensive and reliable results will be possible if the study was carried out in a long-term period.

This study also provides a rich avenue for future research in this area. First, a different method to gather data for the study, for example interviewing the members of board director, would provide further insight into the board members' opinion about environmental sustainability issue and its reporting. Second, a comparative study between countries would also provide additional information whether cultural difference has an influence in the relationship between variables in this study.

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## **NOTES**

1. Part (2) best practices provide a set of guidelines or practices relating to the board of directors and accountability and audit to assist companies in designing their approach to corporate governance.
2. Part (4) explanatory notes provide further explanation of three parts of MCCG.
3. Companies are considered to be in environmentally sensitive industries if they are in the following operations: chemicals, mining, oil and gas, transportation, utilities, wood and timber, construction and properties, agriculture and manufacturing. On the other hand, less environmentally sensitive industries are in the areas of trade/services, hotels and real estate (Frost & Wilmschurst, 2000; Sharifah et al., 2008).

## APPENDIX

### Corporate Governance Index

Item	MCCG_PT2
1	Does the company split the Chairman and CEO/Managing Director posts?
2	Does the company comply with MCCG recommendation on the proportion of independent directors on the board?
3	Is the frequency of board of directors' meetings disclosed?
4	Does the company have a nomination committee?
5	Are the majority of directors on the nomination committee independent?
6	Does the CEO sit on the nomination committee?
7	Does the company disclose recommendations made by the nomination committee?
8	Does the company disclose methods of board appointments?
9	Does the company have a remuneration committee?
10	Is the list of remuneration committee members disclosed?
11	Does the CEO not sit on the remuneration committee?
12	Are the majority of directors on the remuneration committee independent?
13	Does the company disclose recommendations made by the remuneration committee?
14	Are the majority of directors on the audit committee independent?
15	Does the company disclose activities carried out by the audit committee?
16	Does the company disclose a statement on internal control?

Items	MCCG_PT4
1	Does the company disclose relationships that directors have with the company or other board members?
2	Does the company disclose delegation and separation of duties among directors?
3	Does the company disclose current appointments of directors?
4	Does the company disclose directors' experience and education background?
5	Is the list of the nomination committee members disclosed?
6	Is the frequency of nomination committee meetings disclosed?
7	Does the company disclose directors' remuneration?
8	Does the company disclose components of the remuneration scheme of directors?
9	Does the company disclose details of individual remuneration scheme of directors?
10	Does the company disclose affiliations with major shareholders?
11	Does the company disclose material contracts with major shareholders?
12	Does the company disclose board appointments?
13	Does the company disclose investor relations?
14	Does the company disclose individual members' attendance at audit committee meetings?

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