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DETERMINANTS OF ENVIRONMENTAL REPORTING QUALITY IN MALAYSIA

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ABSTRACT

The study examines the relationship between share ownership distribution, profitability, firm size and leverage with the quality of environmental disclosure in annual reports in 2009, two years after Malaysia made corporate social responsibility disclosure mandatory for all listed companies. Three theories; legitimacy, resource based view and information provided the theoretical underpinnings of the study. A content analysis of the annual report of 164 companies in the environmentally sensitive industries (ESI) was undertaken. Disclosure quality was measured using a self-developed index adapted from prior studies. The findings revealed a significant positive association between firm size and leverage with the quality of environmental reporting, thus providing the support for legitimacy theory. Given that share ownership distribution and profitability had no significant relationship with the quality of environmental reporting, the use of resource based view and information cost theories did not provide any support in explaining environmental reporting behavior of companies in the environmentally sensitive industries in Malaysia.

JEL Classification: O130, O110, H760

Key words: Environmental disclosure, Determinants, Legitimacy, Resource based view, Information cost

1. INTRODUCTION

Companies globally are increasingly concerned with environmental issues. Most have realized that the environment is an asset to be managed and that environmental reporting is pertinent. However, while firms in the developed world tend to develop its environmental reporting practices voluntarily (Peters and Romi, 2013; Uwalomwa and Uadiale, 2011), those in the developing world leave it to the government to mandate such practices (Azzone, Manzini and Noci, 1996). A specific case in point is Malaysia. Although the continuous effort by the Malaysian government in protecting the natural environment started in the eighties, social and environmental reporting has only been made mandatory in 2006. With this legislation, effective for annual reports for the year ending 2007 onwards, companies listed on Bursa Malaysia (BM) (Malaysian Stock Exchange) must include information on four focal areas of corporate social responsibility, namely, the community, workplace, employees and the environment. The focus of this paper is on the last. This is part of a larger study examining the impact of the 2006's mandatory CSR reporting requirements of Bursa Malaysia for listed companies. Specifically, there are two stages to the study. The first compares the quality of environmental reporting (ER) of Malaysian listed companies (PLCs) in the environmentally sensitive industries in 2005 and 2009, two years before and two years after environmental reporting was made mandatory. The second investigates whether particular organizational variables such as share ownership distribution, economic performance, leverage and size have any relationship with the quality of ER disclosure. For this we focused on ER in the annual reports of 2009. This paper reports the second part of the study. Environmentally sensitive industries (ESI) were chosen primarily due to the common perception that their activities are more harmful and may impose direct negative impact on the natural environment. More importantly, to provide an insightful explanation pertaining to ER behaviour in Malaysia, the above issues are examined using three different theoretical perspectives: resource based view theory (RBVT), information cost theory, and legitimacy theory. The use of multiple theories, in a way, addresses Gray, Kouhy and Lavers (1995) contention that a reliance on a single theoretical perspective in explaining CSR behavior may not be adequate.

The study is important for two main reasons. Firstly, the results on the determinants of environmental disclosure quality in the annual

reports of companies in the environmentally sensitive industries may present a more recent state of environmental commitment of Malaysian corporations, particularly soon after CSR disclosure (which includes ER) was made mandatory. Discovering the factors that are associated with disclosure quality of environmental information should be useful to stakeholders as this may provide an indication as to the type of companies that generally provide more ER. More specifically, it is of particular importance to determine the factors that promote quality environmental disclosure in ESI as the operating activities of companies in these industries are considered to be potentially more detrimental to the environment. Secondly, the use of several theoretical perspectives will provide a more meaningful explanation on the determinants of ER disclosure (Cormier, Magnan and Velthoven, 2005). Therefore, this study does not only examine the determinants of environmental disclosure quality, but specifically refers to its theoretical underpinnings. This reference to theory provides some inference to the motivation behind the environmental disclosure practices of the companies in ESI. Most importantly, the government and regulators may be interested to know whether this study's findings are reflective of the initiative towards more social and environmental awareness, particularly soon after CSR reporting was made mandatory.

The rest of the paper proceeds as follows. Section 2 focuses on the literature review while section 3 discusses the theoretical framework and the development of the hypotheses. The research method and data analysis are described in section 4 while section 5 concludes.

2. LITERATURE REVIEW

2.1 DISCLOSURE QUALITY

Prior studies examining ER focused on two pertinent aspects: quantity and quality. While the former is self- explanatory, the latter refers to the precision, relevance and usefulness of the reported information (Cormier et al., 2005). Additionally, examining quantity of reporting normally involves the counting of sentences, words and pages. Quality of disclosure, on the other hand, is generally examined using a disclosure index. Given the importance of the quality of ER (as compared to its quantity), the present study thus focuses on the quality of disclosure.

One of the earliest studies examining quality of environmental reporting in corporate annual reports is that of Wiseman (1982), she evaluated the quality and accuracy of environmental reporting of 26 of the largest environmentally sensitive firms in the United States in 1972, 1974 and 1976 using a disclosure index. Results revealed an ER that was vague and incomplete in nature. Quantitative environmental information was generally lacking in the sampled firms. Using Wiseman's (1982) index, Fekrat, Inclan and Petroni (1996) examined environmental disclosure quality of 168 companies in 6 environmentally sensitive industries across 18 countries. They found significant variations among companies in different industries. More importantly, the authors concluded that the quality of environmental reporting in corporate annual reports has not improved significantly despite a lapse of 14 years. In Canada, Cormier and Magnan (1999) examined environmental disclosure of Canadian publicly traded securities during the period 1986 to 1993. The sample of the study was 212 firms from three industries: pulp and paper; oil refining, petrochemical and steel; metals and mines. They found that firms in good financial condition chose to disclose more information than those in poor financial condition.

Cormier and Gordon (2001) then examined the social and environmental reporting strategies of three utility companies; two (2) publicly owned and one (1) privately owned. The quality of environmental disclosure was measured using the updated version of the environmental disclosure index developed by Wiseman (1982) and adapted by Cormier and Magnan (1999). The results showed that publicly owned firms disclosed significantly more qualitative information than those of privately owned firms. However, specific to environmental reporting, although government owned and larger firms are normally expected to provide more disclosure due to their visibility and accountability they found no such evidence in the sampled firms. The authors then concluded that the quality of environmental disclosure appeared to be related to information costs and benefits as outlined by the proprietary cost theory. Essentially what this means is that the decision to disclose environmental information largely depends on the cost and potential benefits derived. If the benefit of environmental disclosure outweighs the associated cost of preparing it, then companies will disclose that information. Extending the study further, Cormier and Magnan (2003) measured the quality and investigated the determinants of corporate environmental reporting using the cost and benefit framework by examining environmental reporting from 1992 to

1997. The sample comprised 246 non-financial French firms. In measuring environmental disclosure, the study used thirty nine (39) disclosure items, which was adapted from Wiseman (1982), and Cormier and Magnan's (1999) index. They found that the average ER disclosure for all sampled firms increased from 1992 to 1997. However, environmental reporting patterns were varied across industries.

Further Cormier, Magnan and Velthoven (2005) observed the quality of ER disclosure of 385 firms in Germany throughout the seven years, from 1992 to 1998. ER disclosure quality was measured using the index and coding instrument of Wiseman (1982) and Cormier and Magnan (1999; 2003). Thirty nine (39) disclosure items were grouped into six (6) categories and measured using a coding system of one (1) to three (3). Although no clear pattern emerged on the environmental disclosure of the companies, the authors concluded that environmental reporting quality is conditioned by industry membership as they found significant differences in ER disclosure between industrial sectors.

2.2 DISCLOSURE INDEX

In examining the quality of environmental reporting in annual reports, many studies (e.g. Bakhtiar, 2005; Cormier and Gordon, 2001; Cormier and Magnan, 1999; Cormier and Magnan, 2003; Cormier et al., 2005; Fekrat et al., 1996; Ten, 2009; Wiseman, 1982), have used the disclosure index to measure the quality of environmental disclosure. This method is said to work better than the counting of sentences (Buhr and Freedman, 2001; Wiseman, 1982). The disclosure index was developed in order to objectively measure the information contained in environmental disclosure and enable a systematic numerical basis for comparing companies' ER disclosures across different firms. Hence, the disclosure index can better represent the quality of environmental information disclosed by companies in annual reports.

Wiseman's (1982) environmental disclosure index (EDI), containing 18 items, was one of the earliest indices found in the literature (Buhr and Freedman, 2001; Cormier and Gordon, 2001; Fekrat et al., 1996). The 18 items in the checklist were further grouped into four categories; accounting and financial/economic factors, litigation, pollution abatement, and other environmentally related accounting measurements. For the scoring system, Wiseman (1982) gives a score of three (3) if a particular item is disclosed and

described in monetary or quantitative terms, two (2) is assigned to disclosed items with specific information but in non-quantitative terms, one (1) is given for the items mentioned in general terms only and zero (0) is given, if the item was not disclosed. To be consistent with many previous studies that measure environmental disclosure quality the present study also adopts a similar scoring procedure except that there are 5 categories. This will be further explained in a later section.

2.3 ENVIRONMENTALLY SENSITIVE INDUSTRIES (ESI)

Corporate environmental disclosure quality is also found to be conditioned by industry membership (e.g Azlan and Devi, 2008; Cormier and Magnan, 2003; Cormier et al., 2005; Hackston and Milne, 1996; Nik Ahmad and Sulaiman, 2004). This is especially true among companies in environmentally sensitive industries (ESI), where it was found that the quality of environmental disclosures was found to be better than those companies in non-ESI. Given this, prior studies have largely focused on companies in ESI (see e.g. Ahmad, Salleh and Junaini, 2003; Fekrat et al., 1996; Iatridis, 2013; Nik Ahmad and Sulaiman, 2004; Peters and Romi, 2013; Wiseman, 1982). Similarly, our study also adopts this stance. Additionally, most prior studies in developing countries have largely focused on the quantity of the environmental information disclosed (e.g. Chatterjee and Mir, 2008; Kuasirikun and Sherer, 2004; Nik Ahmad and Sulaiman, 2004; Thomson and Zakaria, 2004; Tsang, 1998). In Malaysia, the few studies examining ER disclosure quality have found ER to be declarative (Andrew, et al., 1989) contain little quantifiable data; general, ad-hoc and self-laudatory in nature (Nik Ahmad and Sulaiman, 2004).

2.4 DETERMINANTS OF ER DISCLOSURE

Determining the quality of ER disclosure is pertinent. However, of more significance is perhaps to investigate the factors that may influence ER disclosure. This is precisely what the paper attempts to do. Hackston and Milne (1996) examined the association of size, profitability and industry type with CSR disclosure of New Zealand companies. They found that while firm size and industry membership were highly correlated with CSR disclosure, profitability was not. The significant and positive relationship between size and ER

disclosure was also evidenced in studies conducted by Cormier and Gordon (2001), Cormier et al. (2005) and Magness (2006).

On the relationship between economic performance and ER disclosure, results were inconsistent. For example, Ahmad et al., (2003); Azlan and Devi (2008); Cormier et al. (2005); Hackston and Milne (1996); Magness (2006); Mohd. Ghazali (2007) and Ten (2009) have found that a companies' financial performance was not significant in explaining the level of social and environmental disclosures. Al-Tuwaijri, Christensen and Hughes, (2004), Cormier and Magnan (1999) and Smith, Khadijah and Ahmad, (2007), on the other hand, have found that economic performance was significantly associated with environmental disclosure. Given the inconsistent findings, the present study will again examine this relationship.

Yet another important factor that may influence ER disclosure is share ownership. There are two aspects to this. The first relates to who owns the shares-whether foreign or local and the second is on how widely the shares are being held. On the former, previous studies (see e.g. Azlan and Devi, 2007; Azlan and Devi, 2008; Cormier et al., 2005; Eng and Mak, 2003; Huafang and Jianguo, 2007; Mohd. Ghazali, 2007; Qu, 2007) have found a strong association between share ownership distribution with the level of CSR disclosure. In Malaysia, listed companies with large foreign shareholding were found to have greater social and environmental information disclosure as compared to those companies that are locally owned (e.g. ACCA, 2007; Andrew et al., 1989; Ramasamy and Hung, 2004; Teoh and Thong, 1984). This may well be due to their need to legitimize their activities. More specifically, given that these companies are generally larger and are more "visible", their need to appear legitimate may be pertinent.

Companies which have their directors or executives holding a significant portion of the company's shares are said to be closely-held (Mohd. Ghazali, 2007). A widely held ownership of shares in a company means that the shares issued by the firms are not concentrated in the hands of a few large shareholders. Rather the firms may be owned by a large number of shareholders who own a small portion of the companies' shares (Mohd. Ghazali, 2007). Since the shares are owned by the public at large, hence the disclosing of more extensive and higher quality environmental information may lessen information asymmetry between management and shareholders (Cormier and Magnan, 1999; Cormier et al., 2005). This will lower the information cost incurred by shareholders if they were to collect the data themselves. On the issue of the spread of

ownership, Cormier and Gordon (2001) found that there exists a negative relationship between concentrated ownership and ER disclosure. This is not surprising given that the absence of non-managerial or outside shareholders meant that demand for greater voluntary environmental disclosure is relatively low. The present study focuses on this aspect of share ownership distribution.

The higher the leverage, the more risky the company will be as interest and principal payments are obligations that are fixed. These are to be paid irrespective of the level of operating profits. If these obligations are not met, this may lead to bankruptcy and may lead to the transfer of the ownership of the firms' assets from stockholders to bondholders (Ross, Westerfield and Jaffe, 1996). From a legitimacy theory perspective, one may conclude that in order for such companies to appear less risky, these firms may publicly disclose more quality environmental information in order tolegitimise their business. However, Cormier and Magnan (2003) found that leverage did not significantly influence the level of disclosures. Similarly, in Malaysia, Ahmad et al., (2003) found that environmental disclosers were firms with a low rate of financial leverage. Given the inconsistent theoretical underpinnings and the empirical evidence, the present study will again examine the relationship between leverage and environmental disclosure quality.

3. THE THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

3.1 INFORMATION COST THEORY

According to prior research, information costs have the potential to influence corporate disclosures (e.g. Cormier and Magnan, 1999; Cormier and Magnan, 2003; Cormier et al., 2005). This is particularly so for firms which are widely followed by investors where their expansion is highly dependent upon continuous access to capital markets. These firms normally have more motivation to reduce information asymmetry between managers and investors (Clarkson et al., 1994 quoted in Cormier et al., 2005). Such firms will usually provide more disclosure in order to reduce the gap between the managers and investors (Cormier et al., 2005). This will subsequently decrease the information cost incurred by shareholders to gather and analyse additional data. Further, for widely held ownership types of companies, management is directly accountable to many shareholders, thus providing incentives for disclosing more

extensive and high quality environmental disclosures. In addition, the cost/benefit tradeoff that occurs when private information is publicly disclosed is likely to be resolved since benefit is spread out among many shareholders (Cormier and Magnan, 1999). In contrast, closely-held companies, (with the absence of non-managerial or outside shareholders) tend to have a lesser need for environmental information. More importantly, environmental disclosure requires a substantial amount of funds. Additionally, the cost of disclosure may well outweigh the benefit for some companies, especially for smaller firms and closely-held companies. These companies rarely invest huge amounts in socially or environmentally related activities. Furthermore, closely-held ownership and dominant shareholders typically have access to the information that they need (Cormier et al., 2005). Hence, management is not responsive to more extensive publicly environmental disclosures. Accordingly, the following alternative hypothesis is developed:

H_1: The quality of environmental disclosure is positively associated with companies with widely held share ownership.

3.2 RESOURCE BASED VIEW THEORY

Resource Based View Theory (RBVT) is primarily focused on a collection of valuable resources or assets which are owned and controlled by a firm, thus, providing the firm with the basis for sustainable competitive advantage (Barney, 1991). RVBT is developed based on the assumption that the strategic resources are heterogeneously distributed across firms and these differences are stable over time. Furthermore, this strategic resource is their internal capabilities which are valuable, rare, imperfectly imitable and non-substitutable. These may include a firm's management skills, its organisational processes and routines, as well as the information and knowledge it controls (Barney, Wright and Ketchen Jr., 2001).

The RBVT addresses the fit between what a firm has the *ability* to do and what it has the *opportunity* to do. However, the resources cannot be evaluated in isolation, as their value is determined in the interplay with market forces (Collis and Montgomery, 1995 as quoted in Russo and Fouts, 1997). For example, intangible factors such as reputation and leadership in environmental affairs may increase sales among customers who are environmentally sensitive and this will augment profits (Russo and Fouts, 1997). Thus, firms with a pro-environmental reputation are believed to be able to retain

their customers and shareholders in the long run. This will also enhance their economic performance and stability over time. Therefore, this study views that with more stable and enhanced profitability a company is perceived to have more resources to provide better quality environmental disclosure. Accordingly, companies with higher profitability may increase the quality of environmental disclosure primarily because they have better means and opportunities as compared to companies with lower profitability. This leads to the following alternative hypothesis:

H_2: The quality of environmental disclosure is positively associated with better economic performance.

3.3 LEGITIMACY THEORY

To ensure continued existence in a community, legitimacy theory predicts that corporations will do whatever they regard as necessary to preserve the image of a legitimate business in a society (Villiers and Staden, 2006). Furthermore, legitimacy is believed to be achieved by demonstrating that the corporation's activities and performance are compatible with that society's social values (Raar, 2007; Wilmshurst and Frost, 2000). With regard to the growing awareness of environmental protection nowadays, legitimacy theory stresses on how a company will react to a particular community's expectations. However, since legitimacy theory is based on perception, any response or action by a firm's management (to the community expectations) should be accompanied by disclosures (Magness, 2006). Additionally, such disclosures must be publicised (Cormier and Gordon, 2001) so that users or external parties are aware of the firms' environmental performance. One effective mechanism in disclosing environmental performance is through the disclosure in annual reports (e.g. Buhr, 1998; Cho and Patten, 2007; Gray et al., 1995; Raar, 2007; Villiers and Staden, 2006).

For larger companies, which are typically more visible, actions such as disclosing more quality environmental disclosures via annual reports, may demonstrate their commitment and effort to be more environmentally responsible to the communities. This is primarily because the lack of material environmental information may give rise to significant political costs and concerns as larger companies may attract political and regulatory attention. Given this, managers of such companies would be motivated to provide better quality environmental disclosures (Iatridis, 2013). Furthermore, by

complying with community expectations on environmental concerns through disclosure (in annual reports), such an action may also work to preserve the firms continued survival and growth. Thus the following alternative hypothesis is developed:

H_3: The quality of environmental disclosure is positively associated with firm size.

On the issue of leverage, generally higher leveraged companies are perceived to be more risky due to them having a larger proportion of fixed interest bearing capital. Thus, high leveraged firms that fail to demonstrate that they are environmentally responsible may be faced with the possibility of their position in the capital market being threatened. This is primarily because current or potential stakeholders, especially institutional investors may reassess their future or current business relationship with such firms. Subsequently, this will potentially affect firms' future cash flow thus, leading to financial difficulties. Therefore, legitimacy theory predicts that companies may use public disclosure to convey information to stakeholders (Magness, 2006) pertaining to their environmental contributions. Given that the Malaysian government is promoting environmental awareness, one would expect such firms to show to the public that they are contributing to make this objective successful by disclosing better quality information. When the company's value is perceived to be congruent with the society in which the company is operating in, then that company is seen to have the right to continue to do business in that society (Lindblom, 1994, quoted in Magness, 2006). Accordingly, this situation will lead to the following alternative hypothesis:

H_4: The quality of environmental disclosure is positively associated with high leveraged firms.

4. DATA COLLECTION AND ANALYSIS

4.1 THE SAMPLE

As indicated elsewhere in the paper, this study focuses on companies in ESI only. This is primarily because corporate environmental disclosure quality is found to be conditioned by industry membership (e.g. Anuar et al., 2009; Azlan and Devi, 2008; Cormier and Magnan, 2003; Cormier et al., 2005; Hackston and Milne, 1996; Nik Ahmad and Sulaiman, 2004;). There were a total of 785 listed companies on

Bursa Malaysia in 2009. These companies were stratified into eight industries, which were identified as being highly environmentally sensitive. These are industrial products (which include oil and gas, metal manufacturing, cement manufacturing, chemical etc.), consumer products, plantation, property, trading and services, construction, mining, and infrastructure. The selected industries are also consistent with industries that are perceived to be more environmentally sensitive by the Department of Environment (DOE) of Malaysia. Then, using a stratified random sampling technique that selects approximately 25 per cent of the total population; 164 companies were drawn as the sample for the study (Table 1). This sampling technique allows a better representation of the population of ESI. Accordingly, our focus is not merely on the top ranked companies as in prior studies (Bakhtiar, 2005; Hackston and Milne, 1996).

TABLE 1
Distribution of Sample Companies According to Industrial Sectors

No.	Sectors	Number of companies selected	Percentage from total sample (%)
1.	Industrial product	59	36.00*
2.	Consumer product	30	18.30
3.	Plantation	12	7.30
4.	Property	18	11.00
5.	Trading and services	33	20.10
6.	Construction	9	5.50
7.	Mining	1	0.60
8.	Infrastructure project companies	2	1.20
	TOTAL	164	100.00

*59/164 x 100

4.2 CONTENT ANALYSIS

We used content analysis of the annual reports of sampled companies in order to proceed with the scoring of the items based on the checklist that we developed. The detailed checklist, adapted from various studies (e.g. ACCA, 2007; Cormier and Gordon, 2001; Wiseman, 1982), is provided in Appendix I. According to Kolbe and Burnett (1991:243), content analysis is "… an observational research method that is used to systematically evaluate the symbolic content of all forms of recorded communication." Simply put, content analysis is a method used to codify the text of a piece of writing into

various categories, based on some predetermined criteria (Weber, 1988). This is precisely what we have done. Scoring of the items disclosed is presented in Table 2. A score of '4' was given for environmental information disclosed with monetary figures (quantitative-monetary). However, if an item was disclosed in quantitative but non-monetary terms; such as in kg, kilojoules, a score of three (3) was assigned. If the items were disclosed with specific details but in non-quantitative terms, a score of two (2) was assigned, and a score of one (1) was given to the items mentioned in general terms. Finally, a zero (0) score was assigned for the absence of disclosure items. Theoretically, a company can score a maximum of 184 points (46 x 4),with a total of 46 disclosure items in nine different categories (Table 3). This is inclusive of an item for "other environmental initiatives / improvements" as a room for more points for items that may not be specifically listed in the disclosure index.

One pertinent issue that may arise in the use of content analysis is the reliability of the data set. The use of multiple coders, according to Milne and Adler (1999), can help ensure that the data collected are indeed reliable. However, a single coder may also achieve this (i.e. reliability of data) if the coder has had adequate training (Milne and Adler, 1999). More importantly, they argued that a coding instrument that has "… well specified decision categories, with well specified decision rules… may negate the need for multiple coders" (p 238). Given the well specified categories (see Table 2) and decision rules (see Table 3) of our instrument, the content analysis and the coding ("scoring") was done solely by the second author. However, prior training was provided by the other two authors.

TABLE 2
Categories in the Disclosure Checklist

Environmental disclosure items
1. Pollution abatement or environmental pollution control including Key Performance Indicators (KPI)
2. Sustainable development reporting
3. Environmental management
4. Environmental objective, target and achievement
5. Environmental related financial information
6. Stakeholder engagement
7. Negative information and information relating laws and regulation
8. Land remediation and contamination
9. Other environmental related disclosure

TABLE 3
The Scoring Procedures of the Disclosure Checklist

Score	Description of scoring
0	Items are not disclosed.
1	Items are disclosed in general terms.
2	Items are disclosed in specific terms but non-quantitative.
3	Items disclosed are quantitative but non- monetary.
4	Items disclosed are quantitative and monetary.

Share ownership distribution. Consistent with Cormier and Magnan (2003), a firm is considered widely held if related investors owned more than 20 per cent of a firm's vote. Accordingly, a score of "1" is assigned for widely held ownership and "0" (zero) for closely held ownership.

Economic performance. Prior studies used both accounting-based and market based measures to measure economic performance (Al-Tuwaijri et al., 2004). For accounting based economic measures, profitability is one of the proxies used. The use of various economic performance metrics may tend to focus narrowly on one aspect of a firm's economic performance. For example, net income measures a firm's profitability but may ignore the firm's size (Al-Tuwaijri et al., 2004). To address this limitation, this study will use the current year's return on assets (ROA) as a proxy for company's profitability. This will provide a better measure of profitability as ROA indicates how profitable a company's assets are in generating revenue. ROA has also been used in prior studies such as those of Hackston and Milne (1996); Iatridis (2013); Magness (2006), and Muttakin and Khan (2014).

Size. Size has been measured using total assets (Ahmad et al., 2003; Cormier and Gordon, 2001; Huafang and Jianguo, 2007; Hackstonand Milne, 1996), revenues (Cormier and Magnan, 2003; Hackston and Milne, 1996; Lu and Abeysekara, 2014; Patten and Nance, 1998;), market capitalisation (Eng and Mak, 2003; Hackston and Milne, 1996; Magness, 2006; Mohd. Ghazali, 2007), and number of employees (Azlan and Devi, 2008; Cormier and Gordon, 2003). Given that prior literatures have not provided a theoretical basis for any particular measure of firms' size (Hackston and Milne, 1996), this study will use total assets to measure the size of firms. More importantly, information on total assets is easily available from the annual reports.

Leverage level. Consistent with Cormier et al. (2005), Cormier and Gordon (2001) and Cormier and Magnan (1999), financial leverage is measured using the debt to equity ratio.

Data analysis. Data was analysed using the Statistical Packages for Social Science (SPSS) for Windows software version 15 and Microsoft Excel Windows version 2007. First, the descriptive statistics for the data was obtained and subsequently a multiple regression analysis undertaken to test the association between the independent variables (i.e. share ownership distribution, profitability, firm size and leverage) and quality of environmental disclosure (see e.g. Chau and Gray, 2002; Cormier and Magnan, 1999; Hackston and Milne, 1996; Mohd. Ghazali, 2007). The following model is developed to test the association between the type of ownership (*H1),* profitability (*H2*), firm size (*H3*) and financial leverage (*H4)*and the quality of ER.

(1) $QED = \alpha + \beta_1 \text{OWNER} + \beta_2 \text{ROA} + \beta_3 \text{ SIZE} + \beta_4 \text{ DER} + e$

where,

QED : the quality of ER
OWNER : share ownership distribution
ROA : the return on assets
SIZE : firm size and
DER : financial leverage

Table 4 provides descriptive evidence (the means) for both the explanatory variables and dependent variables. Given the significant results of the Kolmogorov-Smirnov Test for ROA, share ownership distribution and DER, it can be concluded that the data exhibits a non-normal distribution. Hence, the non-parametric statistics such as Spearman's rho and Kruskal Wallis would be more appropriate. However, these non-parametric techniques are less powerful as these statistics may not detect differences, even when these exist (Pallant, 2001). To address this, the non-normally distributed variables were transformed using natural log for ROA and DER[1] values. Table 5 presents the results of the Kolmogorov-Smirnov Z Test after the transformation. Subsequent to the transformation, ROA is now changed to TROA and DER to TDER. Data was found to be normally distributed.

TABLE 4
Descriptive Statistics for the Dependent and Explanatory Variables (N=164)

	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable				
Total Score 2009	0.00	95.00	24.80	19.9296
Explanatory Variables				
Return on Assets (ROA)	-96.74	69.74	3.58	15.3464
Debt to Equity Ratio (DER)	-.05	3.14	0.37	0.5753
Firm Size	9.17	17.63	13.11	1.4091
Share ownership distribution (dichotomous variable 1, for widely held, 0 otherwise)	0	1	0.25	0.4340

TABLE 5
One-Sample Kolmogorov-Smirnov Z Test

		TDER	TROA
N		159	127
Normal Parameters	Mean	-0.8605	2.4993
	Std. Deviation	0.74101	1.38337
Most Extreme Differences	Absolute	0.073	0.08
	Positive	0.047	0.08
	Negative	-0.073	-0.06
Kolmogorov-Smirnov Z		0.92	0.904

The Spearman Correlation Coefficient was used to describe the strength and direction of the linear relationship between the explanatory variables (TROA, Share distribution, TDER and firm size) and the disclosure score. The Spearman correlation coefficient[2]as presented in Table 6 ranges from -1.00 to 1.00[3]. There was no multicollinearity amongst the independent variables[4]. Additionally, only TDER and firm size have a strong, positive relationship with the quality of ER. This means that TDER and firm size, respectively, have approximately 41 per cent ($.405^2$) and 45 per cent ($.447^2$) positive association with the quality of disclosure scores in 2009.

TABLE 6
Spearman's Correlations Coefficient

	Total Score 2009	Share Distribution	TROA	TDER	Firm Size
Total Score 2009	1	-0.035	0.011	0.405**	0.447**
Share distribution		1	-0.156	0.01	-0.019
TROA			1	-0.152	0.102
TDER				1	0.414**
Firm Size					1

** Significant at 1 per cent.

4.3 REGRESSION RESULTS

Table 7 provides the descriptive statistics for the regression analysis. Findings tabulated in Table 8 indicate that only TDER and firm size are positively associated and statistically significant at one percent level in explaining the quality of environmental disclosure[5]. The coefficient of -0.116 and -0.045 for the other two variables, share distribution, and return on assets respectively, indicate that these are not significant in explaining the quality of environmental disclosure in the annual reports of the companies under review. Therefore, the findings of this study on the determinants of disclosure quality of environmental information seem to support legitimacy theory but not information cost theory or the RBVT.

TABLE 7
Descriptive Statistics for Regression Analysis

	Mean	Std. Deviation	N
Total Score 2009	24.8049	19.92959	164
Share distribution (%) (widely or closely held)	0.25	0.434	164
TROA	2.4993	1.38337	127
TDER	-0.8605	0.74101	159
Firm Size	13.1054	1.40905	164

** Significant at 1 per cent.

TABLE 8
Regression Results for Environmental Disclosure Score

Independent Variables	Coefficient	Sig.
Share distribution (widely or closely held)	-0.116	0.164
TROA (Return on Assets)	-0.045	0.584
TDER (Debt to Equity Ratio)	0.260	0.005**
Firm Size	0.322	0.001**
R^2	0.266	
Adjusted R^2	0.240	
ANOVA F value	9.991	
Sig. F	0.000	

** Significant at 1 per cent.

Environmental disclosure quality and its determinants. Overall, there appears to be a positive relationship between the size of the firm and the quality of ER disclosure. Thus, the larger the size of the firm, the higher is the quality of environmental information disclosed. This is consistent with the results of prior studies (see e.g. Azlan and Devi, 2008; Cormier and Magnan, 1999; Cormier and Magnan, 2003 Cormier et al., 2005; Hackston and Milne, 1996; Iatridis, 2013; Lu and Abeysekara, 2014; Magness, 2006; Mohd. Ghazali, 2007; Peters and Romi, 2013). Larger companies are arguably more visible in the public eye and are more politically sensitive (Iatridis, 2013; Muttakin and Khan, 2014; Mohd. Ghazali, 2007), thus face greater scrutiny from regulators (Peters and Romi, 2013). Accordingly, such companies tend to disclose better quality environmental information in annual reports. This is perhaps important to legitimise their business. Thus these results appear to provide some support for legitimacy theory. Given that the government is now promoting sustainable development amongst companies in Malaysia, such companies would have more incentive to disclose better quality environmental information in annual reports in order to show their support for the government's initiatives. More importantly, ER disclosure, particularly of larger companies is perceived necessary to preserve their image as a legitimate business. Thus, *H3* was supported. Similarly, a company's leverage is also found to be positively and significantly associated with the quality of environmental disclosure. Accordingly, *H4* was supported.

Companies that are highly leveraged are generally more risky due to their reliance on long term debt holders. Given this, it is important for them to provide evidence to the public that they are environmentally responsible, and that their operations give the least impact to the environment. Again, these findings appear to provide some support for legitimacy theory.

On the other hand, profitability (TROA) and share ownership distribution do not seem to have a significant relationship with the quality of ER. Thus, *H1* and *H2* were not supported. The results appear to be contrary to that of prior studies such as that of Cormier and Gordon (2001); Cormier and Magnan (1999); Cormier and Magnan (2003); Cormier et al. (2005); Iatridis (2013); Lu and Abeysekara (2014); Muttakin and Khan (2014). One possible explanation for the inconsistent results could be due to the maturity of ER in Malaysia. Disclosing companies in Malaysia might not perceive environmental information as economically beneficial for their business. Thus the results do not appear to support the RBVT. In the West, failure to provide high quality environmental disclosure may influence shareholders to bid down prices (Cormier and Gordon, 2001) as a result of negative perception towards companies' environmental performance. In Malaysia, with a generally lower level of environmental awareness amongst shareholders, higher quality of environmental disclosures might not be seen as an important attribute of companies. This misconception is contrary to the propositions of the information cost theory. Additionally, a generally low level of environmental consciousness amongst the preparers (disclosing companies) is another possible reason behind the non-significant association between economic performance and the quality of ER.

5. CONCLUSION

The study examines whether company size, leverage, share ownership distribution and profitability have any relationship with ER. It appears that the size and leverage have a positive and significant association with environmental disclosure. Thus, the larger the size of a company, the better the quality of environmental information disclosed. Similarly, the higher the leverage of the firm, the better the environmental information reported. These results provide some support for legitimacy theory. In a nutshell, legitimacy theory suggests that firms will take steps to ensure that their activities and performances are acceptable to society. Given this, such firms may

use their annual reports to disclose environmental information in order to portray the image of being environmentally responsible. Further, given that larger companies are more "visible", they tend to want to disclose better quality environmental information to ensure that they appear to be legitimate in the eyes of the regulators and other stakeholders. More importantly, such companies would also have a lot to gain if they were to align with the government's initiative, particularly with the mandatory CSR disclosure requirement of Bursa Malaysia in 2006. The same goes for highly leveraged firms. Companies with higher leverage are generally more risky due to having a large portion of their capital as fixed interest bearing capital. Their continued existence is highly dependent on long term debt holders. Given this, to mitigate their risk, it is important for them to provide evidence to the public that they are environmentally responsible. On the contrary, share ownership distribution and profitability did not appear to have any significant relationship with ER. Thus, there appears to be no support for the information cost and resource based view theories in providing an insight into environmental disclosure behaviour in Malaysia. One possible explanation for this may be due to the fact that presently, environmental reporting has not really matured in Malaysia.

Bursa Malaysia's mandatory CSR reporting requirement is, indeed, laudable. Although the Malaysian government appears to be serious about environmental preservation, social and ER practices are just gaining a foothold (Thomson and Zakaria, 2004). While making CSR disclosure mandatory may force companies to report on social and environmental issues (Nik Ahmad et al., 2003), the usefulness of this information as alternative information for decision making may well be trivial given the low level of environmental awareness amongst capital market participants particularly the shareholders. Thus, disclosing companies may not perceive environmental information as economically beneficial. Accordingly, there are certain implications from the findings of this study. Considering that ESI are the focus of this study, it would appear that even companies that could have a severe impact on the environment are merely meeting the recently introduced CSR mandatory requirement for the sake of appearing legitimate. This seems to indicate that the existing mandatory requirements are not enough. Additionally, another pertinent issue that needs addressing is the CSR framework, itself. Simply indicating that listed companies should report on the community, workplace, employees and the environment is not adequate. What is really needed is a more comprehensive framework

detailing the important information that should be disclosed in these four focal areas. Yet another important point is on the enforcement. While making CSR disclosure mandatory is indeed a step in the right direction, without enforcement such efforts may lead to nothing or at best, CSR disclosure is merely undertaken for legitimacy purposes as evidenced by the results of the present study. Last but not least, CSR disclosure should not be left solely to the regulators. Stakeholders who are increasingly concerned with environmental matters should signify that in the long run, environmental conservation efforts, starting with quality disclosure, is bound to have positive economic consequences to these companies.

Finally, the results of the present study should be interpreted in light of certain limitations. Firstly, the sample of the study only consisted of listed companies in environmentally sensitive industries. Hence the results cannot be generalised to other companies in the non-environmentally sensitive sectors. Secondly, the study only relies on ER in annual reports. It excludes other potential sources of environmental disclosures such as press releases, flyers, environmental related promotional material and other possible documents. Thirdly, there may be a minor limitation to the measuring of quality of disclosure because for some companies, non-disclosure may mean that that item is irrelevant to them. However, the assumption taken by this study is that if the companies do not disclose, it is taken as a non-disclosure, hence given a score of zero. Subsequently, the score may be slightly conservative. This fact, however, should not affect the results significantly. Fourthly, the four independent variables selected in the study may not fully represent all the determinants of ER quality. Despite this, given the lack of prior studies examining the determinants of ER in Malaysia, the results of the present study may provide a basis for future research. Last but not least, although there is no support for information cost and resource based view theories to help explain ER practice in Malaysia, this may not necessarily mean that future studies should not use these theories as these theories have proven to be useful in studies examining ER practices in countries where environmental awareness and ER have reached its maturity stage (see for example, Cormier and Gordon, 2001; Cormier and Magnan, 1999; Cormier and Magnan, 2003; Cormier et al., 2005; Russo and Fouts, 1997; Ting et al., 2010).

ENDNOTES

1. Data for share distribution used nominal value (1,0); thus the data cannot be transformed.
2. Spearman Correlation is used because the variable used both scale (TROA,TDER and firm size) and nominal (share distribution) data. The Pearson Correlation analysis was also conducted and the result is consistent with the Spearman's coefficient correlation analysis ; i.e. TDER and firm size are significant in explaining the quality of ER (*significant* at the 0.01 level).
3. A correlation of 0 means no relation at all; a correlation of 1.0 indicates a perfect positive relationship; -0.1 means a perfect negative relationship (Pallant, 2001).
4. Palant (2001) used 0.9 and above for multicollinearity of independent variables to exist.
5. Regression using original data (N = 164) without transformation was also undertaken and the results also showed firm size and leverage to be significant in explaining the quality of environmental disclosure in 2009.

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Appendix I – disclosure score checklist

Company name: _____ Sector : _____

Environmental disclosures items	Quantitative Monetary (4)	Quantitative non- Monetary (3)	Qualitative – specific (2)	Qualitative –general (1)	Total score
Pollution abatement or Environmental pollution control including Key Performance Indicators (KPI)					
Air pollution or emission of carbon dioxide and /or other greenhouse gases					
Waste production and management / discharge information					
Water consumption /pollution					
Noise pollution					
Biological hazards					
Other contamination & remediation efforts					
Compliance status of guidelines					
Sustainable development reporting					
Restoration / rehabilitation or conservation of natural Resources / Biodiversity maintenance					
Recycling / Reuse / reduce					
Renewal resource use (eg; renewable energy sources or to increase energy efficiency) and energy savings					
Environmental management					
Environmental policy or company concern for the environment					
Environmental management system and procedures					
Participation in elaboration of environmental standard					
Appointment of specific officers / specific department for environmental control					
Environmental auditing / inspection / performance audit					
Joint project with other firms on environmental management					
Zero burning policy					
Operational, Safety & Health (OSH) Practices					
Research and Development undertaken					
Training & exercise for employees to engage environmental programs					
Environmental awards ,objectives and other achievement					
Specific environmental objectives / goals & target					
ISO certification					
Environmental improvement					
OSH improvement					
Environmental awards or external recognition received					
Environmental Related financial information					
Environmental budget or specific environmental trust fund					
Investment in eco-friendly facilities					
Environmental pollution control facilities expenditures (past, present & future estimate)					
Other related environmental financial info. (eg. Environmental debts, risks provision, provision for charge)					
Stakeholder Engagement					
Community outreach programs					
Industrial dialogue / collaboration					
Charitable contribution to or partnership with environmental organization					
Supporting environmental campaign environmental initiatives by External parties					
Negative Information and information relating to laws and regulation					
Failure to achieve O & T (environ objective & target)					
Accident & incident					
Regulatory non-compliance					
Fines / penalties / litigation					
Orders to conform					
Corrective actions					
Future legislation or regulation requirement					
Land remediation and contamination					
Sites contamination					
Efforts of remediation (present and future)					
Cost / potential liability (provision for site remediation)					
Spills related information including; nature, amount, efforts to reduce, liabilities					
Other environmental related disclosure					
Material handling – more environmental cautious & significant environmental impact of principal products and services.					
** Other environmental initiatives / improvements; eg. Tree planting and other greening initiatives.*					

* note – room for other environmental initiatives undertaken by firms which are not listed in the above items.