



Board Effectiveness and Quality of Voluntary Carbon Reporting of Malaysian Companies

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Abstract: This study assessed the voluntary carbon reporting (VCR) quality and investigated if board effectiveness is related to the quality of carbon information, as depicted in the company annual reports. The sample comprised of 249 Malaysian public listed companies from a population of Bursa Malaysia for the year 2014. Generally, the findings indicated that the quality of reporting had been relatively low. Using regression model, the results displayed a significantly positive association between the number of directors serving on the board and the quality of VCR. However, board independence and CEO duality did not exhibit any significant role in influencing companies to provide high-quality information. These results have important implications for the top managers who are interested in enhancing their corporate governance practices. The findings are also useful for policy makers and accounting regulatory body as the relevance of enhancing the present carbon reporting requirements are highlighted, along with the introduction of a specific standard for carbon reporting.

Keywords: Agency theory, board of directors, carbon reporting, corporate governance, disclosure index

Paper type: Research paper

1. Introduction

Corporate activities contribute in a significant way to global greenhouse gas (GHG) emissions (Sullivan and Gouldson, 2013). With the increased risk posed by climate change and carbon dioxide (CO₂) emission into the environment and business, it is vital for companies to start controlling CO₂ emissions so as to ensure sustainable corporate development (Luo and Tang, 2014). According to Pellegrino and Lodhia (2012), one effective mechanism to address carbon issues is through carbon reporting practices.

Disclosure related to carbon emission information is an emerging area (Comyns and Figge, 2015) and has been slowly adopted by firms (Broadstock *et al.*, 2017). It is considered as more risky than other types of

voluntary disclosure (Krishnamurti and Velayutham, 2017). In fact, a review of the past carbon reporting literature has documented that the disclosure of carbon emission information is identified as difficult to compare (Comyns and Figge, 2015) and has been criticized for poor quality (Aguiara and Bebbington, 2014; Baboukardos, 2017). Such dissatisfaction with VCR has triggered the need for more researches to look into the quality of carbon reporting so as to monitor the reporting practices of firms.

In line with the popularity of carbon reporting as a means of pursuing environmental legitimacy, an increase in the use of corporate governance mechanisms has been noted in monitoring carbon emissions and climate change risk. Although corporate governance attributes are important determinants of quality voluntary reporting, its relationship with the quality of VCR in developing countries is relatively unexplored, particularly in Malaysia. In fact, Malaysia is among the developing nations experiencing robust economic growth. Implementation of export-oriented growth strategy for economic development has further led to the rise in CO₂ emissions. In view of the accelerating CO₂ emissions in Malaysia, a better understanding of the VCR practices is essential since this is the first vital step for firms to reduce their emissions (Kalu *et al.*, 2016; Pellegrino and Lodhia, 2012). As such, this study examined the VCR practices of Malaysian companies by assessing the quality of carbon information provided, along with the investigation on the impact of board effectiveness upon VCR quality.

Additionally, this study offers insight into whether board effectiveness does influence the quality of VCR and contributes to the emerging literature pertaining to corporate governance and carbon reporting. The broader implication of this study may assist accounting regulatory body, such as the Malaysian Accounting Standard Board, with better comprehension of the present state of carbon reporting practices among Malaysian companies, besides aiding them in considering the need to circulate a specific standard on carbon disclosure. Most importantly, this study helps policy makers by providing insight of the extent to which VCR might contribute to policy formulation in the attempt to address climate change.

The remainder of this paper is organised as follows. The next section reviews the related literature based on the research hypotheses developed. Section 3 elaborates the methodology employed, while Section 4 presents the results of study. Lastly, the summary of the findings, as well as some study limitations and suggestions for future research, is discussed in the final section.

2. Literature Review

The concept of VCR has emerged as a subset of sustainability, global warming, climate change, and GHG reporting (Lodhia, 2011). Carbon accounting information reporting consists of a wider range of information related to climate activities (Wang *et al.*, 2012). In spite of the growth and the development of carbon reporting, the ability of carbon reporting to satisfy the need of various stakeholders in gaining carbon-related information remains an issue. Investors, shareholders, and other stakeholders are increasingly seeking better environmental disclosures in annual reports and accounts (de Villers and van Staden, 2010). In most jurisdictions and for most firms across the global, carbon reporting is largely prepared on a voluntary basis. Thus, the disclosure of carbon information is subject to considerable managerial discretion (Olson, 2010). Apparently, the disclosure varies among companies in terms of subject matter, amount, and comprehensiveness of the information provided. Additionally, there is lack of quantification or incomplete reporting (Liesen *et al.*, 2015), which tends to focus only on positive or neutral elements (Talbot and Boiral, 2015) with little coverage of negative impacts (Dragomir, 2012). Hence, the quality of such disclosure is questioned (Andrew and Cortese, 2011; Baboukardos, 2017).

The corporate governance mechanism is an important factor in promoting an ethical climate in firms through the enhancement of disclosure quality (Peters and Romi, 2014). A good governance system ensures transparent disclosure provided to shareholders and other stakeholders (Agyei-Mensah, 2016). As the board of directors is the primary corporate governance mechanism, it plays a vital role in disseminating relevant information on climate change, including carbon information to users. With that the agency theory is the

most prominent and widely used theory in investigating the influence of board of directors on voluntary disclosure practices. This theory focuses on the resolution of colliding interests between management and shareholders, besides ensuring that the managers are acting in the best interests of their shareholders. It also asserts that firms may use numerous corporate governance mechanisms to encourage goal congruence between agents and principal, so as to offer better monitoring of the agent's behaviour (Amran *et al.*, 2014) and to reduce information asymmetry (Hutchinson and Gul, 2004). One of the ways these firms may alleviate information asymmetry is by providing additional information on a voluntary basis (Agyei-Mensah, 2016; Meek *et al.*, 1995). For instance, Ben-Amar and McIlkenny (2015) discovered that board effectiveness did influence the quality of carbon disclosures. Moreover, a prior study regarding the effectiveness of corporate governance and its impact on the quality of information disclosed revealed that board size and board independence appeared to be the most effective governance mechanisms primarily because these mechanisms facilitate higher levels of monitoring strength over management (Qu *et al.*, 2015).

A. Board Size

The board is an important determinant of effective corporate governance (Dalton *et al.*, 1999), which is vital in monitoring managerial actions (Tauringana and Chithambo, 2015). The main function of the board of directors is to mitigate agency conflicts that arise from the conflicts between ownership and control (Fama and Jensen, 1983). Empirical evidence suggests that with divergent skills, collective experience, and expertise; larger boards possess the capability to reduce information asymmetry (Chen and Jaggi, 2000) and provide better monitoring of disclosure quality (Giannarakis *et al.*, 2014). Moreover, past studies, such as Liao *et al.* (2015), Peters and Romi (2014), and Tauringana and Chithambo's (2015), revealed significantly positive relationship between board size and GHG disclosure. Thus, this study presents the following hypotheses:

H1: There is a positive relationship between board size and quality of VCR.

B. Board Independence

Board members are ultimately tasked to monitor and evaluate the performances exerted by CEO and executive management (Akhtaruddin *et al.*, 2009; Fama and Jensen, 1983). As independent non-executive directors (INDs) are not directly involved in the day-to-day operation and do not have material financial interests in the firms, they are there to act as a control mechanism and their existence is expected to serve a check-and-balance of the firm's behavior (Agyei-Mensah, 2016; Fama and Jensen, 1983). Besides, the independent directors may request additional information during their annual meeting, thus encouraging managers to deliver more details (Liao *et al.*, 2015). A sufficient number of INDs could alleviate the conflicts of interests that exist between the management and the shareholders, hence minimising information asymmetry. Thus, a higher proportion of INDs is expected to stimulate businesses so as to disseminate and convey a wider range of information in ascertaining congruence between managerial decisions, societal values, and firm legitimacy (Liao *et al.*, 2015). In fact, some studies have reported that independent boards are strongly related to quality of voluntary disclosure (e.g. Amran *et al.*, 2014; Liao *et al.*, 2015).

Thus, this study proposes the following hypothesis:

H2: There is a positive relationship between board independence and quality of VCR

C. CEO Duality

The effectiveness of the board also depends on its leadership structure (Ben-Amar and McIlkenny, 2015). CEO duality reflects a situation where the board leadership is held by the same person involved in day-to-

day management of the firm and also responsible for the leadership to the board. As such, conflict of interest can be avoided and the monitoring function of the board can be improved if the positions of CEO and chairman are held by different individuals (Peters and Romi, 2014). On the contrary, if the CEO occupies the chairman position, the CEO is granted the power to negotiate with the board, hence allowing the CEO to pursue self-serving interests (Jensen and Meckling, 1976). More seriously, in the absence of an appropriate monitoring, holding all of these powers in one person may interfere the role of independent directors (Ben-Amar and McIlkenny, 2015; Gisbert and Navallas, 2013), as well as compromise the ability of the board to supervise and lead to decisions that may be detrimental to the firm (Cabrera-Suárez and Martín-Santana, 2015). For instance, it would affect the quality of information disclosed, as depicted by several researchers (Gisbert and Navallas, 2013). Moreover, a past research has generally confirmed the negative association between CEO duality and the extent of voluntary disclosure of GHG information (e.g. Giannarakis *et al.*, 2014). Therefore, this study hypothesised the following;

H3: There is a negative relationship between CEO duality and quality of VCR.

3. Data and Research Design

A. Population and sampling

The population of the study involved all Malaysian Public Listed companies listed on Bursa Malaysia. The initial sample was comprised of 262 companies, which had been randomly selected by using the number generators available in excel. The final sample incorporated 249 companies after excluding companies that (i) belonged to the finance and insurance sectors, as these firms are governed by certain rules and procedures from regulatory bodies that may affect their accounting policies (Tauringana and Chithambo, 2015); and (ii) had no annual reports or had missing data.

B. Measurement of variables

The dependent variable of the study is the quality of VCR, which had been computed based on hand-collected data for the fiscal year 2014 annual report. This study employed the content analysis method as it has been widely used in studies concerning climate change, GHG, and carbon emission disclosure. The content analysis index developed by Choi, Lee, and Psaros (2013) was employed in this study to measure the quality of VCR. The index consisted of 18 disclosure items related to five areas of information. All items were treated as equally important and weights from 0 to 1 were assigned to the items disclosed. Furthermore, a dichotomous variable was included to identify items that appeared in the firm annual reports. As such, 1 is awarded if the firms disclosed information related to the items, while 0 for otherwise. The score was then divided by the total number of items included in the information checklist (18) to achieve the overall reporting quality score.

Furthermore, the independent variable of the study is board effectiveness. Board size, board independence, and CEO duality functioned as proxies for board effectiveness. Board size (BDSIZE) presents the total number of executive and non-executive directors on the board, while board independence (BIND) was measured as the ratio of the number of non-executive directors to the total number of directors. Meanwhile, CEO duality was measured by using the dichotomous variable, which was awarded with 1 when the chairman and the CEO functions fall onto the same person, whereas 0 for otherwise.

In addition, company specific characteristics, including firm size (FSIZE), carbon sensitive industry (SECTOR), and financial performances (ROA), had been used as control variables for their consistent correlation with the quality of VCR. FSIZE was measured by the natural log of total assets, while financial performance was determined by return on assets (ROA) ratio. As for carbon sensitive industry (SEC), it was divided into two categories: carbon-intensive and non-carbon-intensive industries. For companies operating in the industrial sector with high levels of CO₂ emissions, the variable was coded as “1”, otherwise “0”. In fact, the classification of industry sector with high levels of CO₂ emissions had been

based on prior studies (e.g. Chithambo and Tauringana, 2015; Choi *et al.*, 2013; Chu, Chatterjee and Brown, 2013; Luo *et al.* 2013).

C. Empirical Model

The study predicted that the quality of VCR is influenced by board size, board independence and CEO duality. Thus, the model for this study is presented as follows:

$$VCRQ = \beta_0 + \beta_1 BSIZE + \beta_2 BIND + \beta_3 DUAL + \beta_4 FSIZE + \beta_5 ROA + \beta_6 SEC + \varepsilon \quad (1)$$

where

VCRQ is quality of voluntary carbon reporting; BSIZE refers to board size; BIND denotes board independence; DUAL reflects CEO duality, FSIZE is firm size; ROA refers to return to total asset; SEC reflects carbon sensitive industry, and ε denotes estimate error.

4. Results and Discussion

Table 1 shows that out of 249 companies, 49.8% of Malaysian firms reported at least some carbon emission or climate change information in their annual report. Industries with high number of reporting incidences included industrial products and trading/services (27.4%, respectively), consumer products (16.9%), and properties (9.7%). Most of the operations in industrial product companies were found to be sensitive and contributed significantly to climate change. Therefore, they behaved differently, when compared to firms derived from other industry groups in disclosing carbon information.

Table 1. Status of carbon reporting by Malaysian companies

No	Industry	Distribution of companies	Reporting companies	Reporting companies per sample (%)*
1	Construction	17	7	5.6
2	Consumer Products	44	21	16.9
3	Hotels	1	1	0.8
4	Industrial Products	73	34	27.4
5	IPC	3	2	1.6
7	Plantations	14	8	6.5
8	Properties	25	12	9.7
9	Technology	9	5	4.0
10	Trading/Services	63	34	27.4
		249	124	

*Number of reporting companies for each industry divided by the total reporting companies (i.e. 124)

Descriptive statistics on the total sample is provided in Table 2. As depicted in Table 2, the quality of reporting had been relatively low with an average score of 5.92 percent. The maximum score for VCR quality is 61.10%, as disclosed by a company that operated in both infrastructure and plantation industries. The reason for low level of VCR quality is that the majority-assessed firms (155 out of 249) operated in less carbon-emitting sectors. In addition, there is no statutory requirement in Malaysia that requires public listed companies to disclose carbon information to the public. The practical implication is that the carbon information disclosed had been very inadequate and most of the listed companies in Malaysia failed to provide high quality carbon information, thus making it difficult for stakeholders to assess how their companies were affected by risks in relation to climate change. Similarly, it would be difficult for investors to make accurate investment decision. With respect to corporate governance attributes, only 15.3% of the firms appointed the same person for both CEO and chairman positions. On average, seven members and

48.235% of INDs served on each board.

Table 2. Descriptive statistics of variables

	VCRQ	BSIZE	BIND	FSIZE	ROA
Mean	5.921	7.305	48.235	19.576	3.517
Std dev	9.584	1.852	12.882	1.747	11.537
Min	0.000	4.000	25.000	13.94	-59.590
Max	61.10	16.000	83.330	24.83	67.770

Table 3 presents the Spearman correlations between all the variables employed in this research. Non-parametric test was performed in this study to examine the correlations between board effectiveness variables and quality of VCR because the distribution of data was found to be abnormal. As depicted in Table 3, not all the variables are statistically related to each other. Most correlations had been low, indicating lower risk of multicollinearity. The highest inter-correlation between the variables was 0.341 (board independence and board size), in which the coefficient is less than 0.8. Thus, the analysis fulfilled the assumption of multicollinearity (Field, 2013).

Table 3. Spearman correlation of variables

	VCRQ	BSIZE	BIND	DUAL	FSIZE	ROA	SEC
VCRQ	-						
BSIZE	.205**	-					
BIND	.019	-.341**	-				
DUAL	-.094	-.142*	.086	-			
FSIZE	.175*	.208**	-.089	-.013	-		
ROA	.217**	.174**	-.134*	.009	.213**	-	
SEC	.115	-.003	-.036	-.146*	-.041	.024	-

The results obtained in the estimations of the model proposed are synthesised in Table 4. The findings displayed a relatively low explanatory power with 7.1% of the variability in VCR quality. Besides, the model is significant at 0.001 level with an F ratio of 4.177.

Table 4. Multiple regression

	Coefficient	T-stat	P-value
VCRQ		-1.353	.177
BSIZE	.226	3.419	.001
BIND	.095	1.458	.146
DUAL	-.070	-1.126	.261
FSIZE	.035	.570	.569
ROA	.169	2.712	.007
SEC	.019	.308	.758

In line with the agency theory and past studies (e.g. Chen and Jaggi, 2000; Liao *et al.*, 2015; Peters and Romi, 2014; Tauringana and Chithambo, 2015), the findings reported in Table 4 are in support of Hypothesis 1. The findings confirmed that the high proportion number of directors on board offers the directors with new perspectives to analyse the issues to be addressed, thus suggesting higher quality of corporate decisions (Liao *et al.*, 2015). As a result, larger boards are more likely to provide high quality information.

Nevertheless, the evidence in this study did not support the monitoring role of independent directors through the dissemination of high quality carbon information. Although the board members appeared to be independent, their state of mind may be affected by influences that could compromise one's professional judgment, scepticism, integrity, and objectivity (Buniamin *et al.*, 2011). Additionally, the results showed that dual role had been less influential in inducing a firm to report high quality information on carbon issues. As such, Hypotheses 2 and 3 are not supported.

Meanwhile, the results for control variables indicated that only financial performance coefficient was significantly positive ($p=0.007$). This is in line with the fact that profitable firms are more likely to provide high quality information and carbon use information disclosure in the attempt to reduce information asymmetry. Finally, firm size and carbon-sensitive industries exhibited insignificant relationships with quality of VCR.

5. Conclusion

This study investigated the effect of board effectiveness upon quality of VCR, as prepared by Malaysian firms. The attributes of firms' corporate governance had been expected to influence the quality of VCR in a timely manner. As found in this study, Malaysian firms have failed to put in sufficient effort into VCR. One possible explanation would have to do with the fact that carbon reporting is still a new practice and its practice in Malaysia is still in its infancy stage. The findings from the regression model indicated that board size played an important role in carbon reporting decisions. However, board independence and CEO duality were not in line with agency theory expectation.

Furthermore, this study contributes to the recent literature in environmental and corporate governance areas by extending the research on the VCR in the context of developing countries by investigating the quality of carbon information disclosed. The findings highlight the relevance of enhancing the present carbon reporting requirements, along with the introduction of a specific standard on carbon reporting. As a result, Malaysian firms are encouraged to be more active in disclosing carbon information and in providing high quality information.

Nonetheless, several limitations have been noted in this study. Only annual reports had been considered as a major means for companies to disclose carbon information to stakeholders. In addition, the study focused on one single country and in one single year. Hence, the results are generalizable only to Malaysian public listed companies and cannot be applied to unlisted companies or companies in other countries. Besides, the investigation of the factors influencing the quality of VCR had been delimited to three corporate governance variables, thus incomprehensive to conclude the existence of a significant relationship between corporate governance and quality of VCR. Moreover, the comparison between Malaysia and other countries via longitudinal analysis using various means to gather information, apart from annual reports, such as stand-alone reports or corporate websites, are recommended. Future research also should consider the development of a comprehensive framework in order to assess the quality of corporate governance, besides examining its influence upon VCR practices.

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