

**CORPORATE ENVIRONMENTAL DISCLOSURE
IN MALAYSIA**

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Abstract

The objective of this thesis is to theoretically and empirically investigate how the changing political and economic institutional environment in Malaysia influences the quantity (CEDQty) and quality (CEDQ) of corporate environmental disclosure in both annual and sustainability reports (ARs and SRs) of Malaysian publicly-listed companies in environmentally-sensitive industries (ESI). It also examines how the explanatory variables modify the relationship between the institutional environment factors and reporting practices.

This thesis developed a research instrument (i.e., Corporate Environmental Disclosure Index) based on the international and Malaysian guidelines to analyse the CEDQty and CEDQ of 411 reports by 135 companies in Malaysia for the reporting years of 2006, 2008 and 2014, an important period when substantial institutional changes occurred at both the international and the national levels. Based on institutional theory, and supported by Islamic accountability and resource-based theories, the theoretical framework developed in this thesis conceptually explained factors that drive companies' responses to institutional pressures resulting from institutional changes, and how those institutional changes have influenced the CEDQty and CEDQ practices by Malaysian companies over time.

The theoretical framework of this thesis was then empirically tested using a mixed qualitative and quantitative method. The empirical models applied the Generalised Estimating Equation (GEE) approach in recognition that panel data is used. Depending upon whether it was CEDQty or CEDQ and whether it was aggregated or individual reporting items analysed, a multivariate linear regression, binary or ordinal logistic regressions technique was used. The model developed incorporated multi-levels of

institutional analysis comprising the international and Malaysian environment, along with company-specific characteristics of Islamic influence, corporate governance, financial performance and other control variables. The findings reveal that institutional changes, the non-government institutional ownership and women on boards are strong drivers for CEDQty, whereas institutional changes, female Chairperson, the non-government institutional ownership and women on boards are strong drivers for CEDQ in the Malaysian context.

This thesis has multiple implications. Firstly, it offers insights into CEDQty and CEDQ practices over time in both ARs and SRs in a developing economy by focusing on Malaysia using panel data analysis. Secondly, it adds support to an application of institutional and resource-based theories, and limited support for Islamic accountability as a valid theoretical framework for the Malaysian context. Thirdly, this thesis introduces new variables of Islamic influence and corporate governance within the CED research. Finally, the findings of this thesis should be useful to the Malaysian ESI companies, regulators, accounting professions and other institutions in understanding current CEDQty and CEDQ practices so as to further increase these practices in the future.

Student Declaration

“I, Siti Masnah Saringat, declare that the PhD thesis entitled Corporate Environmental Disclosure in Malaysia contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work”.

Signature



Date 5 August 2019

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List of Abbreviations

ACCA	Association of Chartered Certified Accountants
ACCA MaSRA Awards	ACCA Malaysia Sustainability Reporting Awards
AGM	Annual General Meeting
AICPA	American Institute of Certified Public Accountants
AR	Annual Report
BM	Bursa Malaysia or Stock Exchange of Malaysia
BM MM Listing Requirements	Bursa Malaysia Main Market Listing Requirements
BM CSR Framework	Bursa Malaysia Corporate Social Responsibility Framework
BNM	Bank Negara Malaysia or Central Bank of Malaysia
CCM	Companies Commission Malaysia
CED	Corporate Environmental Disclosure
CEDQ	Corporate Environmental Disclosure Quality
CEDQty	Corporate Environmental Disclosure Quantity
CEO	Chief Executive Officer or Managing Director
CR	Corporate Responsibility
CSEAR UK	Centre for Social & Environmental Accounting Research United Kingdom
CSR	Corporate Sustainable Responsibility
CSD	Corporate Sustainability Disclosure
DJIM	Dow Jones Islamic Market Index
DOE	Department of Environment, Malaysia
EPF	Employee Provident Fund, Malaysia
EPU	Economic Planning Unit, Department of Prime Minister Malaysia
EQA	Environmental Quality Act 1974, Malaysia
ESI	Environmentally-Sensitive Industries
FRS	Financial Reporting Standards
FTSE	Financial Times Islamic Index Series
GEE	Generalised Estimating Equation
GFC	Global Financial Crisis 2007-2008
GICS	Global Industry Classification Standard
GLC	Government-Linked Companies
GLIC	Government-Linked Investment Companies
GRI	Global Reporting Initiative
GTFS	Green Technology Financing Scheme
ICM	Islamic Capital Market
ICR	Institute of Corporate Responsibility Malaysia
IFRIC	International Financial Reporting Interpretations Committee
IR	Integrated Reporting
IIRC	International Integrated Reporting Council
ISO	International Organisation for Standardisation
KLD	Kinder, Lydenberg and Domini
KPMG	KPMG is a name of one of international audit firm
KWAP	Kumpulan Wang Amanah Persaraan (Diperbadankan)
LTAT	Lembaga Tabung Angkatan Tentera
LTH	Lembaga Tabung Haji
MASB	Malaysian Accounting Standard Boards

MCA	Malaysian Chinese Association
MCCG	Malaysian Code of Corporate Governance
MFRS	Malaysian Financial Reporting Standards
MIA	Malaysian Institute of Accountants
MIC	Malaysian Indian Congress
MICPA	Malaysian Institute of Certified Public Accountants
MIIFC	Malaysian International Islamic Financial Centre
MOF	Ministry of Finance Malaysia
MOF Inc.	Ministry of Finance Malaysia Incorporated
MSCI	Morgan Stanley Capital International Islamic Index Series
MSWG	Minority Shareholder Watchdog Group
MWFC	Ministry of Women, Family and Community Development, Malaysia
NACRA	National Annual Corporate Reporting Awards
NDP	National Development Policy 1991-2000
NEM	New Economic Model
NEP	New Economic Policy
NTP	National Transformation Policy 2011-2020
NVP	National Vision Policy 2001-2010
OECD	Organisation for Economic Co-operation and Development
PAC	Public Accounts Committee Malaysia
PCG	Putrajaya Committee on GLC High Performance
PNB	Permodalan Nasional Berhad
PwC	PriceWaterhouseCoopers is a name of one of international audit firm
RO	Research Objective
RQ	Research Question
R&D	Research and Development
SAC	<i>Shari'ah</i> Advisory Council
SCM	Securities Commission Malaysia
SIDC	Securities Industry Development Corporation, Malaysia
S&P	Standard & Poor Islamic Index Group
SR	Sustainability Report
UK	United Kingdom
UMNO	United Malay National Organisation
UN	United Nations
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGC	United Nations Global Compact
US	United States of America
WBCSD	World Business Council for Sustainable Development
WRI	World Resource Institute
WWF	World Wildlife Fund

CHAPTER 1: INTRODUCTION

1.1 Background and Motivation

... And eat and drink, but do not be wasteful. Indeed Allah does not love those who are wasteful. (Qur'an, n.d., v. 7:31)

The above verse compels mankind to be a wise and accountable steward of all resources in and of the Earth. Yet, modernisation, in tandem with industrialisation, has accelerated the desire for economic growth, which has in turn led to an increased utilisation of the natural and other resources. Some utilisation has been solely driven by profit making, with limited attention to the impact on the natural environment (Cho and Roberts, 2010; de Villiers et al., 2011). Such exploitation of natural resources in business practices has had serious impact on the natural environment, sometimes irreversible, through ecosystem degradation, such as climate-change, water pollution and deforestation. This phenomenon is well illustrated by a number of environmental catastrophes (e.g., the 1984 Bhopal Union Carbide poisonous gas leak, the 1986 Chernobyl nuclear power plant accidents, the 1989 Exxon Valdez oil spills, the 2011 Fukushima Daiichi nuclear power plant hydrogen-air explosion, the 2015 Mariana iron ore tailings dam disaster) that triggered significant public concern worldwide about environmental responsibilities (Srinivasan and Gopi Rethinaraj, 2013; Steinhauser et al., 2014; Zou et al., 2015).

Similarly, Malaysia has experienced environmental catastrophes. For example, during 2014, a few river basins in Selangor had been contaminated with high ammonia levels due to sewage pollution and fertilisers runoffs. This resulted in

people in Selangor and Kuala Lumpur having a shortage of water supplies due to the drying of reservoirs. There was also illegal land clearing for crop plantations at Cameron Highlands, Pahang. This caused earth movement which resulted in landslides and fatal mudslides. In another case, the planting of latex timber clones in Pahang had caused degradation of 30,000ha of Lesong Forest Reserve in Pahang (Li, 2014). These events have raised concern about environmental issues in Malaysia and they also impact the environmental concern at global level.

In response to this burgeoning global crisis, the United Nations (UN) Secretary General (Ban Ki-moon) urged all parties, including all nations and companies from all industry sectors, to work together in minimising the impact of ecosystem degradation and potentially catastrophic climate change. The Secretary General delivered this message during the Second UN Environment Assembly held in Kenya in May 2016 (UNEA, 2016). This commitment is important because the Secretary General further emphasised that “we cannot promote sustainable development unless and until we recognise and address its environmental dimensions” (UNEA, 2016, p. 1).

The UN has appealed to all nations to acknowledge and take responsibility for their part in addressing environmental change, both locally and globally. This process may be termed ‘environmental responsibility’ and represents a formal commitment by nations and their public and private organisations to minimising the negative social and environmental harm of conducting business.

In demonstrating this commitment, environmental responsibilities require accountability. Broadly, responses to this environmental accountability are reflected by intensified concerns from interested parties on sustainability disclosure as a means of discharging such accountability (Burritt and Schaltegger, 2010). Malaysia’s commitment towards this accountability is evidenced in the Malaysian Government policy statements. For example, in the 2007 budget speech, the Malaysian Prime Minister announced that all Malaysian publicly-listed companies will be required to report their corporate sustainability activities (Malaysian

Government, 2006a). This announcement was then translated into the listing requirements of Bursa Malaysia (2006a, 2006b, 2006c) by requiring Malaysian companies to provide corporate sustainability disclosure (CSD). Thus, the commitment to provide CSD may be interpreted as a reflection of companies' behaviour regarding accountability towards sustainability, in supporting the efforts of the Malaysian Government, alongside the cumulative efforts of other nations who are also responding to the environmental aims urged by the UN.

In tandem with the growing interest of CSD, corporate environmental disclosure (CED) as a key element of CSD, has become increasingly important due to stakeholders seeing it as a responsibility that every company needs to address. For this reason, stakeholders are increasingly demanding that companies provide CED to assess the negative impacts they may be having on the environment through their business activities. At the same time, companies may also consider that by providing CED they can evaluate how their activities affect the environment and take proactive measures to help mitigate any negative impacts. This thesis will examine how companies response to CED by investigating the pattern of CED from both a quantity (CEDQty) and quality (CEDQ) perspective and the associated factors that influence both practices.

Research into CED has been dominated by research on developed economies. The study of CED based in developing economies has been under-researched (Belal et al., 2013; Mahadeo et al., 2011; Tilt, 2016, 2018; Yang et al., 2015). For instance, in their review of CSD in developing economies over 1983-2008, Belal and Momin (2009) categorise this CSD research into three: studies of the volume or extent of CSD and their determinants; studies of the perceptions of CSD by managers; and studies of the perceptions of CSD by stakeholders. They discovered for the period of 25 years there were only 41 articles related to developing countries published in eleven¹ accounting journals. On average, there was less than two articles per year

¹ 1) Accounting, Organisations and Society; 2) Accounting, Auditing & Accountability Journal, 3) Critical Perspectives on Accounting, 4) British Accounting Review; 5) Accounting Forum; 6) Social and Environmental Accountability Journal; 7) The International of Accounting; 8) Advances in

or less than four articles per journal concerning developing countries compared to less than five articles per year or 75 articles per journal in developed economies over 1989-2006 as reported by Owen² (2008). Of those 41 publications identified in Belal and Momin (2009), only three articles examined the Malaysian context in relation to CSD as a broader perspective, rather than CED. The more recent research by Zaini et al.³ (2018) on the review of voluntary disclosure (CSD is a part of it) in developing countries reveals an average of less than three articles per year or less than five articles per journal were published from 1998-2016. Of the 51 articles reviewed in Zaini et al. (2018), only four were based in Malaysia and all related to CSD.

There has been arguably a small but growing body of research devoted to CED (and CSD) in Malaysia. Some have focused on the overall CSD (Amran and Devi, 2007, 2008; Amran and Haniffa, 2011; Arshad et al., 2012; Esa and Ghazali, 2012; Ghazali, 2007; Haji, 2013b, 2013a; Haji and Ghazali, 2013a; Othman et al., 2011; Rahman et al., 2011; Said et al., 2009; Saleh et al., 2010; Zainal et al., 2013) while some have examined CED (Ahmad and Haraf, 2013; Ahmad and Mohamad, 2014; Ahmad and Sulaiman, 2004; Ahmad, Hassan, et al., 2003; Buniamin, 2010; Buniamin et al., 2011; Eljido-Ten, 2009a; Hamid et al., 2015; Iatridis, 2013; Mokhtar and Sulaiman, 2012; Othman and Ameer, 2010; Said et al., 2013; Smith et al., 2007; Sulaiman et al., 2014; Yusoff and Lehman, 2009; Yusoff et al., 2007). However, of those CED studies, most have used data up to only 2009 (Ahmad and Mohamad, 2014; Hamid et al., 2015; Said et al., 2013; Sulaiman et al., 2014) with

International Accounting; 9) Research in Accounting in Emerging Economies; 10) Abacus; and 11) Managerial Auditing Journal.

² He restricted the review of publications to Accounting, Auditing & Accountability Journal (AAAJ).

³ 1) Accounting, Auditing & Accountability Journal; 2) Accounting Forum; 3) Advances in International Accounting; 4) Auditing and Taxation; 5) British Accounting Review; 6) International Journal of Accounting; 7) Managerial Auditing Journal; 8) Social Responsibility Journal; 9) The International Journal of Accounting; 10) Journal of Cleaner Production; 11) Journal of Commerce and Management; and 12) Environmental Management and Health.

exception to Iatridis (2013) who examined CED until 2011. The review of the current literature also shows that CED in Malaysia is still at a low level.

Among the studies of CED, few have compared the reporting pattern of CED for at least two years (Ahmad and Haraf, 2013; Eljido-Ten, 2009a; Hamid et al., 2015; Iatridis, 2013). Those that compared the reporting pattern of CED (and CSD) have related CSD to specific institutional pressures, with most focusing on examining impacts of the mandatory CSD implementation by Bursa Malaysia (Malaysian Stock Exchange) effective from 2007 (Haji, 2013a, 2013b; Hamid et al., 2015; Othman et al., 2011; Zainal et al., 2013). Even though some studies extended institutional pressures to include major events in both the international and Malaysian contexts, these studies explored CSD rather than CED (Haji, 2013b, 2013a) and employed legitimacy and agency theories in justifying CSD practices. However, in the process of achieving legitimacy for CSD, Parker (2005) contended that legitimacy theory ignores the concepts of accountability and transparency in the relationship between firms and society. Thus, the legitimacy motive alone is inadequate to promote disclosure. Meanwhile, since agency theory emphasises the relationship between shareholders and managers, this theory considers CSD reporting as merely a compliance with rules and regulations (Filatotchev and Nakajima, 2014) while the reason for reporting may be beyond compliance. Thus, in the context of institutional pressures, the application of institutional theory is perhaps more suitable because of its strength in explaining how different events could lead to different sources of institutional pressures, which then influence CED practices. This also acknowledges the call made by Hahn and Kuhnen (2013) for research using institutional theory in regards to mandatory CSD reporting. Therefore, this signals a need to extend the understanding of the CED practices in Malaysia.

Because each country has its own set of social, political, economic and company-specific characteristics, theories and methodologies adopted in research based in developed economies may not suit studies based in developing economies (Tilt, 2016; Wright et al., 2005). Research in developing economies needs to depart from

a Western perspective and follow the individual country contexts that shape their reporting practices (Belal and Momin, 2009; Patten, 2015). Malaysia is of interest in this study because it is a developing economy with an emerging capital market and with a unique set of multi-cultural diversities. This thesis will integrate multiple theoretical perspective to develop a framework suitable to interpret CED in Malaysia specifically.

This thesis investigates the ways in which Malaysian companies report CED and the factors that influence CED reporting. Prior research based in developed economies documented that companies normally offer narrative environmental information, as opposed to quantifiable information. However, the latter is perceived as more useful in assessing CED (e.g. Cho et al., 2010; Neu et al., 1998). Furthermore, instruments used for CED measurement are currently undergoing considerable debate in regards to both volume-based CED (e.g., word counts, page counts) or extent-based CED (e.g., content of CED with respects to the presence or value of information) (Cormier et al., 2011; Fallan, 2015; Helfaya and Whittington, 2019). While the volume-based CED is useful in providing insights in understanding the growing awareness of CED, it lacks information on the coverage and quality of CED that it provides. This calls for the employment of extent-based CED (van der Laan et al., 2005; Unerman, 2000). However, the current literature on CED (and CSD) research in Malaysia, has shown that studies either use volume-based or extent-based measurement. Even of those studies in the category of extent-based CED, very few had measured CED based on the combination of quantity and quality in a single study (Ahmad and Haraf, 2013; Ahmad and Mohamad, 2014; Buniamin, 2010; Buniamin et al., 2011; Eljido-Ten, 2009a; Mokhtar and Sulaiman, 2012). The use of a single extent-based CED measures in the study of CED risks results being incomplete because the binary scoring scale in the quantity of CED limits the extensive measure of CED, while measuring the quality of CED only possibly leads to debate regarding the linearity of the scoring scale. Further, it is possible the factors affecting each the quantity and quality of CED may not be the same factors. Therefore, this thesis includes both extent-based CED which refers to

the CED index that measure the quantity (presence of CED item or CEDQty) and quality (value of CED item or CEDQ).

The current literature on the Malaysian CED (and CSD) is also limited by transplanting research instruments (CED index) directly from the West to the Malaysian context. Very few have customised the CED index to the Malaysian context (e.g. Esa and Ghazali, 2012; Haji, 2013b; Hamid et al., 2015). This lacks the integration of the Malaysian pronouncements including policies, legislations and guidelines relating to environmental responsibilities into the development of the CED index used in those studies. This thesis will address this limitation by incorporating both the international and Malaysian guidelines in the development of a CED index.

The review of the Malaysian CED (and CSD) research points to the extensive use of legitimacy theory (Ahmad and Haraf, 2013; Haniffa and Cooke, 2005) and agency theory (Iatridis, 2013; Said et al., 2013) to explain CED by Malaysian companies (see Section 3.4). Findings of the abovementioned research indicate that the political and economic environment, company characteristics and internal decision-making processes have influenced corporate disclosure. However, none of those studies have developed a theoretical framework that effectively integrates the three main factors in explaining the Malaysian CED. This thesis will address this limitation by developing a multi-theoretical framework drawing from institutional theory, Islamic accountability and resource-based theory. This multi-theoretical framework developed in this thesis aims to provide a richer and more comprehensive understanding of Malaysian CED practices.

Moreover, although some Malaysian research has employed institutional theory in CSD, these studies only examined the effect of institutional pressures on CSD at one period, rather than exploring these effects at different time intervals (Amran and Devi, 2008; Amran and Haniffa, 2011). This signifies a lack of research that integrates the influence of different institutional pressures on CED over time and

explains why responses differ in individual companies even though they are situated within the context of the same country.

In the Malaysian context, the *Constitution of Malaysia* (Malaysian Government, 2009a) recognises Islam as the official religion of Malaysia. Thus, there is a need to investigate how Islamic accountability is incorporated into corporate accountability in the Malaysian CED domain. However, research that examines the Islamic accountability in CED (and CSD) is limited, not only in Malaysia, but also worldwide (Aribi and Gao, 2010; Haji and Ghazali, 2013a). This limitation will be addressed in this thesis by examining the extent to which Islamic accountability is realised in Malaysian CED practices.

Added to the limited use of institutional theory and Islamic accountability, the Malaysian CED studies have restricted the utilisation of resource-based theory to particular company characteristics (Arshad et al., 2012; Haniffa and Cooke, 2002; Sulaiman et al., 2014). This is in spite of this theory's potential for expansion in explaining the links between company characteristics and internal decision-making processes, and CEDQty and CEDQ.

Studies of CED in Malaysia also are either limited to analysing CEDQty and CEDQ using cross-sectional data only (Buniamin, 2010; Buniamin et al., 2011; Said et al., 2013), or using a panel data study to CEDQ only (Iatridis, 2013). Additionally, the data collection in most of those studies has not been updated beyond 2009 with the exception of the study by Iatridis (2013) which has extended to 2011. Unlike other Malaysian CED studies that confined their content analyses to annual reports, only Iatridis (2013) had analysed CEDQ using both annual reports and websites. In spite of a growing interest in the utilisation of sustainability reports (KPMG, 2015), no studies on this medium have been undertaken in the Malaysian context. This thesis addresses all these issues by using panel data spanning the years from 2006 to 2014 and drawing data from both annual and sustainability reports.

As both CEDQty and CEDQ provide a platform for companies to communicate their environmental commitment, it is essential to investigate what drives CED

(detailed in Section 3.5 and Section 4.5). There have been studies considering a country's context (e.g., political, economic and cultural) in examining factors influencing CED (e.g. Belal and Momin, 2009; Fernandez-Feijoo et al., 2014) (detailed in 3.5.1 and Section 4.5.1). However, very few studies have explored the cultural influence on CED from a religious perspective. Exceptions are the studies by Brammer, Williams, et al. (2007) and Zainal et al. (2013) (detailed in Section 3.5.3 and Section 4.5.2). This thesis will explore the unique role a religion may play in influencing CED in Malaysia.

The current study of CED in Malaysia is also limited by the lack of studies that consider corporate governance as a factor influencing reporting behaviour, as argued by Adams (2002) (detailed in Section 3.5.3 and Section 4.5.3). While corporate governance mechanisms of board size and board independence are common in Malaysia, the mechanisms related to the influence of gender in the decision-making of Chairpersons, CEOs and boards of directors have been emerging areas of inquiry in recent years (Borghesi et al., 2014; Huang, 2013; Liao et al., 2015; Manner, 2010). However, these have received little attention in both CSD and CED, not only in Malaysia, but also worldwide. Added to these considerations, corporate governance in Malaysia is unique in that some companies are linked to the government by ownership through institutional investors (How et al., 2014). However, the existing Malaysian studies tend to investigate the association between government institutional ownership and CED, and fail to consider the make-up of institutional investors (detailed in Section 4.3.2.5 and 4.5.3.2). This may be problematic because the make-up of institutional investors may exert influence on CED, given that the Malaysian Government recognises the role of institutional investors in the Malaysian capital market (MSWG and SCM, 2014) (see Section 4.3.2.5). This thesis will address both these shortcomings in the CED research.

With regard to the association between financial performances and CED, the literature has shown mixed evidence (Fifka, 2013; Hahn and Kuhnen, 2013) (detailed in Section 3.5.2 and Section 4.5.4). This thesis will revisit this link because

varying institutional scenarios in Malaysia between 2006 and 2014 may lead to different results.

1.2 Research Objectives and Questions

In order to address the limitations identified in the previous section, it is timely to advance the empirical evidence regarding the practices of corporate environmental disclosure quantity (CEDQty) and quality (CEDQ) in Malaysian companies. Accordingly, the central research objective (RO) of this thesis is to examine both the changing patterns of CEDQty and CEDQ in Malaysia and how the associated drivers influence both practices. This will be done by investigating how both the international and Malaysian contexts have changed these practices in annual and sustainability reports, using the multi-theoretical lens of institutional theory, Islamic accountability and resource-based theory. By doing so, this thesis not only reveals the current state of convergence and divergence of Malaysian policies, legislation and guidelines with international guidelines for CED, but also provides evidence of Malaysian companies' CEDQty and CEDQ practices.

The overarching research objective (RO) of this thesis is to investigate the extent to which the corporate environmental disclosure quantity (CEDQty) and quality (CEDQ) practices of Malaysian publicly-listed companies have changed over time, and if so, how the external and internal factors surrounding these companies have influenced their CEDQty and CEDQ practices. This central research objective comprises the following three subsidiary objectives (ROs), which in turn formulate ten research questions (RQs).

RO1: To develop a conceptual framework that will enrich the understanding of CEDQty and CEDQ in Malaysia.

The first objective (RO1) addresses the limitations identified in the literature associated with a comprehensive theoretical framework which integrates the

political and economic environment, company characteristics and internal decision-making processes in explaining CED practices of Malaysian companies.

In developing this framework, it is essential to appreciate the history of Malaysia as a nation. Malaysia gained its independence from the British in 1957. The ‘sons of the soils of Malaysia’ are termed ‘Bumiputera’⁴ with the majority being Malays (Gomez and Jomo, 1999). However, during the British colonialisation, the colonial authorities brought labourers, especially from China and India to work in certain economic sectors in Malaysia. Following Malaysia’s Independence, these immigrants were subsequently granted Malaysian citizenship along with an acknowledgement of their ethnic origins. While this identification of ethnicity aligned with economic functions, it polarised the political landscape of Malaysia, signifying the multicultural diversity of Malaysian society (Haniffa and Cooke, 2002).

The *Constitution of Malaysia* protects the interest of Malays by providing a definition of Malay in Article 60. Included in this definition of Malay is “a person who professes the religion of Islam...” along with a range of associated criteria. This is promulgated in Article 3 of the Constitution that recognises Islam as the official religion of Malaysia, and the Malay Rulers in each State in Malaysia as the Head of Islam in the respective State, while the Yang Dipertuan Agong (Head of Malay Rulers) as the Head of Islam in Malaysia (Malaysian Government, 2009a).

Taken together, this background of cultural, political and economic circumstances influences the ruling government’s approach in responding to the international call for environmental responsibility (Amran and Haniffa, 2011; Haniffa and Cooke, 2005). Thus, addressing this background alongside the changing institutional environment at the international and Malaysian levels between 2006 and 2014 in the areas of CSD and CED requires an assessment of suitable theories. This thesis contends that institutional theory will provide a richer explanation of the Malaysian

⁴Bumiputera is a term in Malay language that refers to the ‘sons of the soils’. Bumiputera comprises of Malay and indigenous ethnicities in Malaysia including Senoi, Semang, Jakun, Iban, Bidayuh, Penan, Bajau, Kadazan, Murut etc.

CED practices based on the changing institutional environment over time. Furthermore, this theory offers a multilevel analysis that is crucial for the empirical analysis of this thesis, which will include the international and Malaysian context, and the company-specific context including decision-making processes.

In regard to the Malaysian context, given that Islam is the official religion of Malaysia and one of the criteria that defines Malay ethnicity, this thesis considers that the influence of religion can be explained using Islamic accountability. In Islamic teaching, this notion provides a strong foundation in understanding how Malaysian companies implement Islamic accountability in their CED practices. Islamic accountability can be considered in its own right, or be integrated into institutional theory as a source of institutional pressures, which can be in the forms of regulative institution (e.g., accountability to God), normative institution (e.g., ritual obligation) and cultural-cognitive institution (e.g., taken-for-grantedness of Islamic teaching). This is because Islamic accountability upholds the principles of full disclosure and social accountability (Baydoun and Willet, 2000). Providing CED in accordance with Islamic accountability is not only essential for business survival, and thus benefits for future generations, but it is also important for the Day of Hereafter⁵ based on Islamic beliefs. However, the extent to which Malaysian companies and their agents (Chairpersons and CEOs) practise this notion is not apparent in the literature. Hence, the incorporation of cultural influences from a religious perspective to represent Islamic accountability, that suits the Malaysian context, will add to the theoretical and empirical knowledge of CED practices. The use of Islamic accountability in this thesis aligns with Tilt (2018) who calls for more analysis of situational context of the country under examination in the CSD research.

In responding to institutional pressures for CED, companies require resources and thus resources can become constraints and options to companies. Resource-based theory enhances institutional theory and Islamic accountability theory in that the

⁵ Day of Judgement in accordance to Islamic belief.

theory has further potential for expansion in terms of how the unique set of company-specific characteristics will become resources and dynamic capabilities in the reporting of CEDQty and CEDQ in a specific country context. For this reason, this multi-theory approach is expected to benefit the CED research in Malaysia because each theory has its own strength in complementing the others, rather than contrasting and competing with them (Hahn and Kuhnen, 2013). However, to guide the direction of this thesis, institutional theory will be used as the central theory in the framework of this thesis.

To test this theoretical framework, the second research objective (RO2) is:

RO2: To examine whether the pattern of CEDQty and CEDQ practices have changed over time in line with changes in the Malaysian institutional environment.

Two stages of testing will be undertaken to examine RO2. The first stage examines the pattern in each reporting year. The second stage assesses the changing pattern across the years. This will provide an empirical analysis of not only the changing pattern of the overall CEDQty and CEDQ, but also each of their disclosure dimensions and individual items over time against the backdrop of Malaysia's changing institutional environment. Although the quantity of CED research in Malaysia is growing, this thesis posits that there is scope for advancement on this front.

For example, there is limited research examining the combination of both extent-based CEDQty and CEDQ. In acknowledging this, this thesis contends that research that examines both the CEDQty and CEDQ is equally important in providing insights into how Malaysian companies interpret the expectation of stakeholders (or institutions) regarding CED, and therefore extends the existing Malaysian CED studies by including both measures of CED. The measures of CEDQty reflect the completeness of CED in terms of the presence of CED items in the CED index, while CEDQ manifests the quality of CED information of the same item.

To enable such an analysis, this thesis will construct a CED index that integrates ten pronouncements of the Malaysian Government, including policies, legislations and guidelines relating to environmental responsibilities with three international guidelines of: (i) Global Reporting Initiative (GRI), (ii) Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, and (iii) Guide to Corporate Sustainability (Section 5.4.1). This thesis contends that this combination of the Malaysian and international guidelines in this instrument is considered comprehensive and addresses the limited reference of the Malaysian guidelines in the CED index of the existing Malaysian studies.

This research explores the extent to which these guidelines, that were issued between 2006 and 2014, reflect the changing institutional environment at the international and Malaysian levels in the field of CED (and CSD). For instance, in 2006, the GRI guidelines were revised for the second time and issued as GRI3. Concurrently, the Malaysian Government through Bursa Malaysia issued the revised *2006 BM MM Listing Requirements*⁶ together with *2006 BM CSR Framework*⁷. These requirements compel Malaysian publicly-listed companies to provide CSD in their annual reports effective from 2007 (Bursa Malaysia, 2006c, 2006a).

In the subsequent period between 2008 and 2014, the GRI was revised twice, while the Integrated Reporting (IR) framework was introduced for the first time. In the Malaysian context, among the responses in the CED (and CSD) field were the *2009 National Policy on Climate Change*, the *2009 National Policy on Green Technology* and the *Malaysian Environmental Quality Act 1974 (Amended 2012)*. These Malaysian policies together with the earlier policies articulated support for the *Malaysian Vision 2020* of a sustainable nation with the high quality of life (EPU, n.d.). Thus, the selection of this period will offer insight into how institutional pressures resulting from this changing institutional environment at different time

⁶ Bursa Malaysia Main Market Listing Requirements

⁷ Bursa Malaysia Corporate Social Responsibility Framework

intervals (i.e., 2006, 2008 and 2014) influence the Malaysian CEDQty and CEDQ practices in terms of the reporting media, overall pattern and content.

This period is also important because it not only extends the existing studies by providing a panel data analysis, but it also provides more recent CED practices in Malaysia. Furthermore, this period allows this thesis to fill the void in the reporting medium by including sustainability reports in addition to annual reports. Not only that, this thesis also provides a fresh perspective in the pattern of CEDQty and CEDQ by analysing the disclosure according to individual items as well as according to the convergence or divergence of the international and Malaysian guidelines across time. Accordingly, these findings will help to answer the following research questions:

RQ1: What is the extent of CEDQty that Malaysian companies report in both annual and sustainability reports (ARs and SRs)? How have patterns differed in 2006, 2008 and 2014?

RQ2: What is the extent of CEDQ that Malaysian companies report in both annual and sustainability reports (ARs and SRs)? How have patterns differed in 2006, 2008 and 2014?

RQ3: To what extent have international and Malaysian guidelines influenced CED by Malaysian companies?

While RO2 directs the empirical analysis on the patterns of CEDQty and CEDQ based on the conceptual framework in RO1, the final research objective focuses on the empirical analysis of how the Malaysian institutional environment drives the Malaysian CEDQty and CEDQ practices. Accordingly, the final research objective is:

RO3: To advance the empirical analysis of relationships between both institutional changes and company-specific characteristics, and CEDQty and CEDQ in Malaysia.

This objective underpins the review of theoretical and empirical literature of CED that has identified that there are similarities in CED practices among companies across the world. However, to some extent, these practices are also different given that each country is unique because of its own social, political, economic and company-characteristics. These unique attributes result in this thesis arguing that institutional theory, Islamic accountability and resource-based theory are the most suitable suite of theories to explain the drivers of CEDQty and CEDQ practices by Malaysian companies at particular periods and over time. Using the empirical model of overall, dimensional and individual CEDQty and CEDQ (Chapter 4), the findings will help to address the following research questions:

- RQ4: How are both patterns of CEDQty and CEDQ, and factors influencing their reporting in Malaysia explained in the context of institutional, Islamic accountability and resource-based theories?*
- RQ5: What is the extent of the relationship, if any, between CEDQty and Islamic influence? If a relationship exists, how does it differ among CEDQty dimensions?*
- RQ6: What is the extent of the relationship, if any, between CEDQ and Islamic influence? If a relationship exists, how does it differ among CEDQ dimensions?*
- RQ7: What is the extent of the relationship, if any, between CEDQty and corporate governance? If a relationship exists, how does it differ among CEDQty dimensions?*
- RQ8: What is the extent of the relationship, if any, between CEDQ and corporate governance? If a relationship exists, how does it differ among CEDQ dimensions?*

RQ9: What is the extent of the relationship, if any, between CEDQty and financial performance? If a relationship exists, how does it differ among CEDQty dimensions?

RQ10: What is the extent of the relationship, if any, between CEDQ and financial performance? If a relationship exists, how does it differ among CEDQ dimensions?

1.3 Theoretical Framework

This thesis employs institutional theory as a central framework while integrating both Islamic accountability and resource-based theories in guiding the research direction. As theorists assert that institutional pressures and institutional changes require time, institutional theory has been adopted due to its strength in explaining CEDQty and CEDQ practices in different reporting periods (Dacin et al., 2002; Delmas and Toffel, 2004; Scott, 2014). Moreover, this theory offers a multilevel analysis of institutional changes suited to the understanding of different levels of change, in particular, changes occurring in emerging countries (Hoskisson et al., 2013). In this context, this research posits that institutional changes can be viewed at the three levels of an institutional system (political and economic, organisational field, and individual organisation) in a two-way relationship: top-down influences and bottom-up responses (Yang et al., 2015). Here, top-down influences include the roles of political and economic environments, and the organisational field surrounding companies in driving and shaping their behaviour in regards to CEDQty and CEDQ practices through exerting different forms of pressure. The bottom-up responses reflect the perceptions and interpretations of companies on such pressures and their choice of legitimate options in responding to their surrounding environments at particular points in time, and over time. As institutional theory explains that sources of pressures in these institutional systems are derived from regulative (coercive), normative and cultural-cognitive (mimetic) institutions, it can be used to assist in determining the reasons for pressures and

responses in both CEDQty and CEDQ practices related to legitimacy, resources, stability and survival (Meyer and Rowan, 1977; Oliver, 1991). This capacity of analysis is crucial to this study.

Islamic accountability can enrich the understanding of the sources of institutional pressures by introducing the notion of accountability in Islam from a religious perspective to explain the building of these three structures in an institution. While Oliver (1991) merged the resource-based theory with institutional theory in the form of constraints and options for strategic responses to institutional pressures, this thesis enhances Oliver's argument. Consistent with Wernerfelt (1984), company specific-characteristics are viewed as input resources that lead to output resources in the forms of CEDQty and CEDQ. The dynamic link between these input and output resources that derives from the exchange of intra-company and inter-company resources result in dynamic capabilities. That is, another form of resources that later will be a form of competitive advantage in companies (Lado and Wilson, 1994; Teece et al., 1997).

Drawing from this understanding, this thesis examines patterns and the drivers of CEDQty and CEDQ by classifying these drivers into external and internal factors (Section 4.2). These factors are both the representation of the three levels of institutional systems and sources of institutional pressures (regulative, normative and cultural-cognitive). These external factors are proxied by institutional changes to represent an analysis at the first two levels of the institutional systems (political and economic level, and organisational field level), whereas the internal factors represent an analysis of the company-specific context (individual organisation level). Meanwhile, CEDQty and CEDQ are the responses provided by companies based on their interpretation and perception of these institutional pressures. To illuminate the insights of this approach, Figure 1-1 and Figure 1-2 provide diagrams that link the research objectives, research questions and methodologies that apply in this thesis and are discussed in more detail in the next section.

1.4 Research Methodology

This thesis advances prior research based in Malaysia by adopting a mixed qualitative and quantitative method research methodology in that the reporting of CED is measured by using both extend-based CED – one is quantity (CEDQty) and the other one is quality (CEDQ). This addresses the limited empirical studies that used both measures of CED in a single study. While the interest of this thesis is on CEDQty and CEDQ, these data are not readily available. Thus, there is a need to construct a CED index to measure both CEDQty and CEDQ.

As shown in Figure 1-1, a rigorous CED index will be developed by integrating the reviews of CED literature with both the international guidelines, and Malaysian policies, legislations and guidelines issued between 2006 and 2015 to represent the context of changing institutional environments on CED. This CED index contains 30 items that can be grouped into six dimensions (see detailed Section 5.4.1)

For CEDQty, each CED item in the CED index will be assessed on binary scale of 0 (absence) and 1 (presence), following Patten (2002). The CEDQty will be calculated by summing up the overall score and sub-total score by dimension of CED items based on binary scale. For CEDQ, each CED item in the same CED index will be assessed on ordinal scale of 0 to 4 as follows: 0 (non-disclosure); 1 (brief qualitative disclosure); 2 (detail qualitative disclosure); 3 (quantitative non-monetary disclosure); and 4 (quantitative monetary disclosure), following Hamid et al. (2015) and Sulaiman et al. (2014). The CEDQ will be measured by summing up the same scores on ordinal scale (see detailed Section 5.5.1). The validity and reliability of the CED index and the reliability of the coding process are achieved through comprehensive reviews of literature and guidelines, well-specified dimensions and scoring rules, and intra-coder and inter-coder reliability tests (see Section 5.4.2 and 5.4.3).

Consistent with the conceptual schemae depicted in Figure 1-1 to 1-2, this thesis addresses RO2 and RO3 by focusing on companies listed on the Bursa Malaysia,

using a sample of the environmentally-sensitive industries (ESI) in utilities, energy and materials. This is due to their significant social and environmental impacts on society at large (Branco and Rodrigues, 2008). The ways in which these industries communicate their CEDQty and CEDQ via both annual and sustainability reports, the two important channels for corporate communication repertoire, are assessed in the reporting years of 2006, 2008 and 2014 of the total 135 companies in the sample (405 firm-year observations) (Section 5.2 to 5.3). Each of these years are chosen because of their significance, explained as follows:

- (i) 2006 was the year that the revised *BM MM Listing Requirements* and *BM CSR Framework* were announced. This year also signals the year that sustainability reporting awards by the accounting profession was recognised and the year before the revised bi-annual issuance of *Shari'ah-compliant* status companies listing in 2007.
- (ii) 2008 was the year after the revised *BM MM Listing Requirements* and *BM CSR Framework* became effective. This year also marked when the revised *2007 and 2012 MCCG (Malaysian Code of Corporate Governance)* came into effect, the year of Global Financial Crisis, and the year before the introduction of the *2009 National Policy on Climate Change*, the *2009 National Policy on Green Technology*, the *Malaysian Environmental Quality (Industrial Effluent) Regulations 2009*, and *Malaysian Environmental Quality Act 1974 (Amended 2012)*. In addition, this year signified the year after the revised bi-annual issuance of *Shari'ah-compliant* status companies listing in 2007, and four years before the 2012 revised screening method for *Shari'ah* assessment.
- (iii) 2014 was eight years after the effective implementation of both the revised *BM MM Listing Requirements* and *BM CSR Framework* became effective. This year also marked two years after the 2012 *MCCG* became effective, six years after the Global Financial Crisis 2007-2008, five years after the introduction of the *2009 National Policy on Climate Change*, the *2009 National Policy on Green Technology*, and the *Malaysian Environmental Quality (Industrial Effluent) Regulations*

2009. This is also two years after the introduction of the *Malaysian Environmental Quality Act 1974 (Amended 2012)* and the 2012 revised screening method for *Shari'ah* assessment.

The spread of years spanning from 2006 to 2014 is aligned with institutional theory because this theory posits that the longitudinal analysis allows sufficient time for institutional changes between 2006 and 2008, and between 2008 and 2014 to have significant impact on CED.

This thesis employs the qualitative software Atlas.ti (detailed in Section 5.4.3) to assess the content analysis of CEDQty and CEDQ at the aggregate, dimensional and individual item levels. The results of this content analysis enable this thesis to achieve RO1 and RO2 by answering RQ1 to RQ3 (Section 4.2 and Chapter 6).

Given that the 135 companies are listed on the stock exchange and attract public visibility, it is crucial to understand how companies are likely to respond to institutional pressures (external factors) in reporting CEDQty and CEDQ, and how company-specific elements of Islamic influence, corporate governance, financial performance and control variables (internal factors) may modify this link. Figure 1-2 reflects the link between RO1 and RO3 with RQ4 to RQ10. RO1 provides a framework to explain the potential associations between both external and internal factors, and both CEDQty and CEDQ, while RO3 empirically tests this framework. In this framework, the external factor is represented by institutional changes, while the internal factors refer to company-specific factors comprising Islamic influence, corporate governance, financial performance and control variables that shaped 13 hypotheses (Section 4.5). Each hypothesis will test the link of each independent variable with CEDQty and CEDQ individually.

This thesis derives the data for independent variables from annual reports, DataStream and MINT Global databases. While panel data linear regressions are employed for analysis related to both aggregate and dimensional CEDQty and CEDQ, a panel data binary logistic regression is used for the CEDQty individual

item, whereas a panel data ordinal logistic regression is utilised for CEDQ individual items (Chapter 5). SPSS is used to analyse the quantitative data which then provides answers to RQ4 to RQ10 in achieving RO3 (Chapter 7).

Figure 1-1: Conceptual schema that link RO1 and RO2 with RQ1 to RQ3 and the research methodology

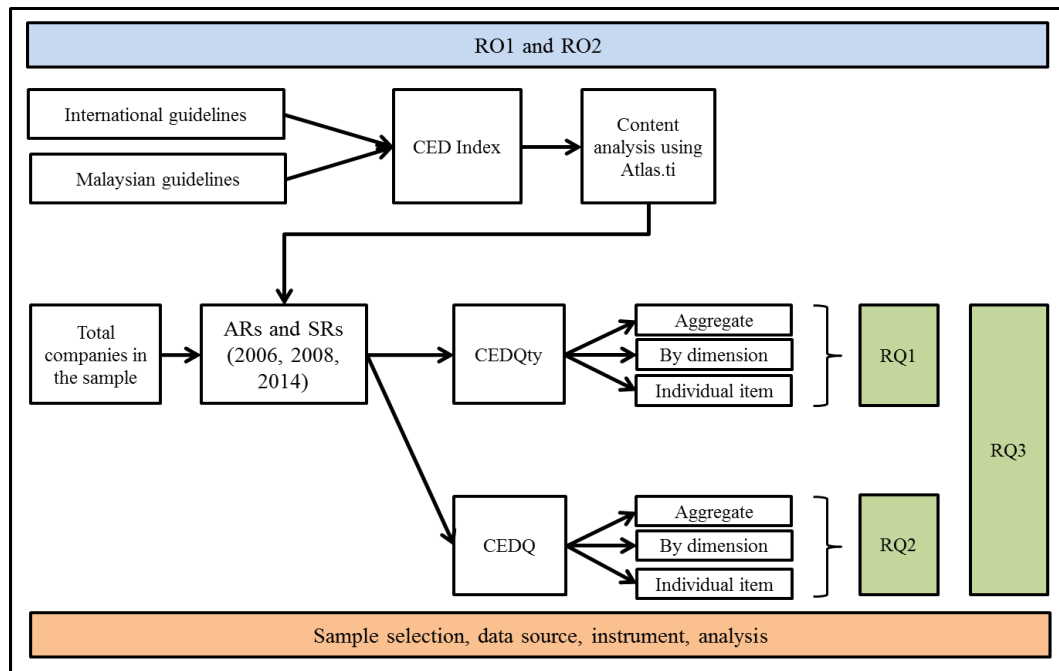
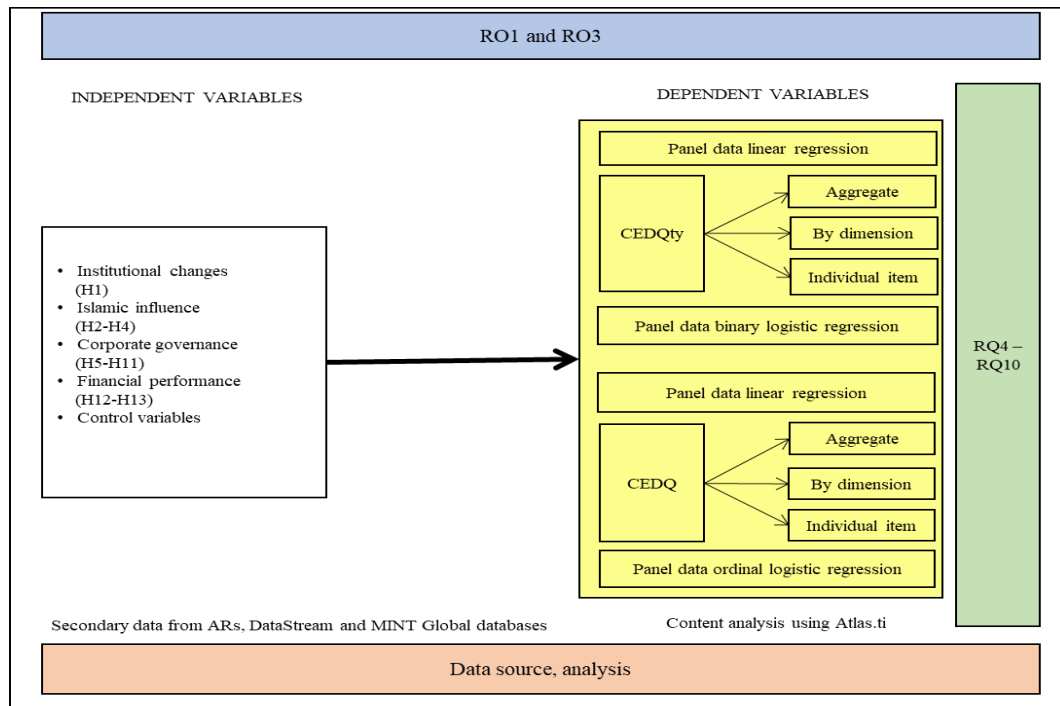


Figure 1-2: Conceptual schema that link RO1 and RO3 with RQ4 to RQ10 and the research methodology



1.5 Significance of This Study

The findings of these seven research questions will help to extend the existing body of knowledge in several ways. First, as the analysis involves panel data, the results will provide strong support for the institutional analysis, as it is argued in institutional theory that institutions change over time. In addition, the results will validate the empirical model that institutional theory provides a multilevel analysis, which in this thesis will be tested based on the international and Malaysian institutional environment, and company-specific characteristics including decision-making processes.

Second, in regard to the influence of institutional pressures based on the Malaysian institutional environment, the results will extend the existing CED studies based in Malaysia by showing the impact of Malaysian guidelines (including policies and legislations) spanning between 2006-2008 and 2008-2014 in influencing the CEDQty and CEDQ practices.

Third, the conceptual framework extends the application of Islamic accountability in CED research in Islamic countries (detailed in Section 8.4.1). This will provide a new perspective of sources of institutional pressures and Islamic accountability.

Fourth, this thesis will offer a more extensive analysis of the impact of corporate governance by introducing gender variables for the Chairperson, CEO and board of directors, which have been of emerging interest recently, but were lacking in CED research, both in Malaysia and worldwide. Additionally, the analysis considers the impact of the unique Malaysian structure of institutional ownership by splitting the impact of this ownership into ‘government’ and ‘others’. The findings will furnish evidence as to whether institutional investors of both categories are playing their roles in the Malaysian capital market as stipulated in its respective guidelines. Finally, the results will also explore the impact of conventional financial performance measures in the Malaysian and CED context.

All these results will reflect the different impacts of institutional pressures on companies, and different responses from companies in their interpretation of these pressures, as explained in institutional theory. These responses will also illuminate the extent of Islamic accountability practices observed by companies and their agents in decision-making, and the integration of different types of resources in achieving dynamic capabilities of providing CEDQty and CEDQ, as proposed in the resource-based theory.

1.6 Scope of Study and Definition of Terms

This thesis measures the CEDQty and CEDQ based on the CED index. The information on CEDQty and CEDQ will be gathered through the content analysis of annual reports and sustainability reports of 2006, 2008 and 2014 because this thesis assumes that all CED information revealed in both media represents the overall picture of CED practices carried out by companies. This rests on the arguments of Gray et al. (1995b) and Guthrie et al. (2008) that each report has its own merit in communicating relevant information. Thus, to minimise the risk of

excluding CED information included in these media, this thesis incorporates both annual and sustainability reports. Nonetheless, if companies in the sample do not provide CEDQty and CEDQ via these two mediums, this thesis will deem these companies to have failed to disclose their CEDQty and CEDQ. Similarly, if companies do not disclose their CED activities in these reports during respective years, this thesis concludes that companies will have failed to engage in any environmental activities in the respective reporting year.

In addition, there are possibilities that companies may indeed engage in extensive environmental activities, yet, they either fail to disclose these activities or do not disclose their CED extensively in relation to quantified information of non-monetary or monetary. This would result in either no CEDQty or a low CEDQ. Despite this, this thesis judges that if companies do not disclose CED or do not provide any quantified information of CED, that these companies are not involved or just have a minimum involvement in CED practices.

The following are the definitions of terms that will be used throughout this thesis.

Corporate social responsibility or corporate sustainable responsibility (CSR):

CSR encompasses all aspects of the universe, and firms are responsible for accounting for how their activities affect the universe, particularly in the area of social and environmental concerns (Gray et al., 1997).

Corporate sustainability disclosure (CSD):

CSD refers to the disclosure of information pertaining to financial and non-financial performance that demonstrates a firm's interaction with its physical and social environment (Gray et al., 2001; Hackston and Milne, 1996).

Corporate environmental disclosure (CED):

CED refers to the dissemination of information concerning the effect of a firm's economic decisions and actions in the past, present and future, on the natural environment (Berthelot et al., 2003; Campbell, 2004).

Volume-based CED:

This refers to the CED measurement based on word counts, sentence counts, line counts, page counts, proportion of pages counts, and frequency of word occurrence, irrespective of its content.

Extent-based CED:

This refers to the CED measurement based on either third party (e.g., the US Council on Economic Priorities ratings and the PIRC Environmental Reporting 2000 Survey) or a CED index. This measurement offers the breadth of CED information because it considers the content of CED information rather than simply counting the length of information.

Corporate environmental disclosure quantity (CEDQty):

CEDQty refers to the extent-based CED that measures the content of CED with respect to the presence of CED items in the CED index. In other words, CEDQty measures the quantity or completeness of CED items in the CED index.

Corporate environmental disclosure quality (CEDQ):

CEDQ refers to the extent-based CED that measures the content of CED with respect to the quantified value of CED items in the CED index. The value for each item ranges from 0 to 4. In other words, CEDQ measures the quality of CED items in the CED index based on the weight of quantified information.

1.7 Thesis Structure

This thesis is organised into eight chapters, as outlined in Figure 1-3. Chapter 1 introduces this thesis by providing the background and motivation of the research. Following this, research objectives and questions, theoretical framework, research methodology, significance of this study, along with scope of this thesis and definitions of terms are explained.

Chapter 2 presents different theoretical perspectives that fit within the domain of CSD reporting. This review leads to the rationale for the selection of institutional theory as the central theory underpinning the pattern and determinants of both CEDQty and CEDQ. This theory is integrated with a combination of Islamic accountability and resource-based theories to explain the determinants of both practices.

Chapter 3 reviews the empirical findings pertinent to CED involving the measurement and determinants of CED worldwide and in Malaysia. These determinants include external factors, which addresses the context of different countries, and internal factors that involve differences in company-specific characteristics together with decision-making processes at Chairpersons, CEOs and boards of directors levels. The objective of this chapter is to evaluate the empirical findings and their theoretical arguments, which in turn determine the limitations and scope for improvement in the relevant literature.

Chapter 4 develops a conceptual framework that is built from the multi-theoretical lenses of institutional, Islamic accountability and resource-based theories. Institutional theory integrates the possible effect of institutional pressures and changes at the international and Malaysian levels, by offering a multilevel analysis of the political and economic environment, and organisational fields. These pressures and changes represent top-down influences that are external to companies. Company-specific characteristics then represent internal factors that

modify the bottom-up responses by companies to institutional pressures on CEDQty and CEDQ by Malaysian companies.

Included in these sources of pressures and responses to such pressures are the elements of Islamic accountability. This notion of accountability can be integrated into institutional theory in terms of regulative, normative and cultural-cognitive institutions. In regard to the responses of companies, some of the selected company-specific characteristics represent the influence of Islamic accountability. Meanwhile, the resource-based theory intersects in this framework by arguing that all the company-specific characteristics are input resources that provide opportunities for companies to produce output resources in terms of CEDQty and CEDQ. This interaction process between different types of resources and the output leads to dynamic capabilities, that is, another type of resource that may possibly contribute to a competitive advantage. This chapter also reviews the literature of the history of Malaysia, Islamic influence, corporate governance and financial performance in developing a set of testable hypotheses. Later, this chapter develops a model for empirical testing. This chapter is relevant for reporting the theoretical and empirical investigation of CED in the Malaysian context.

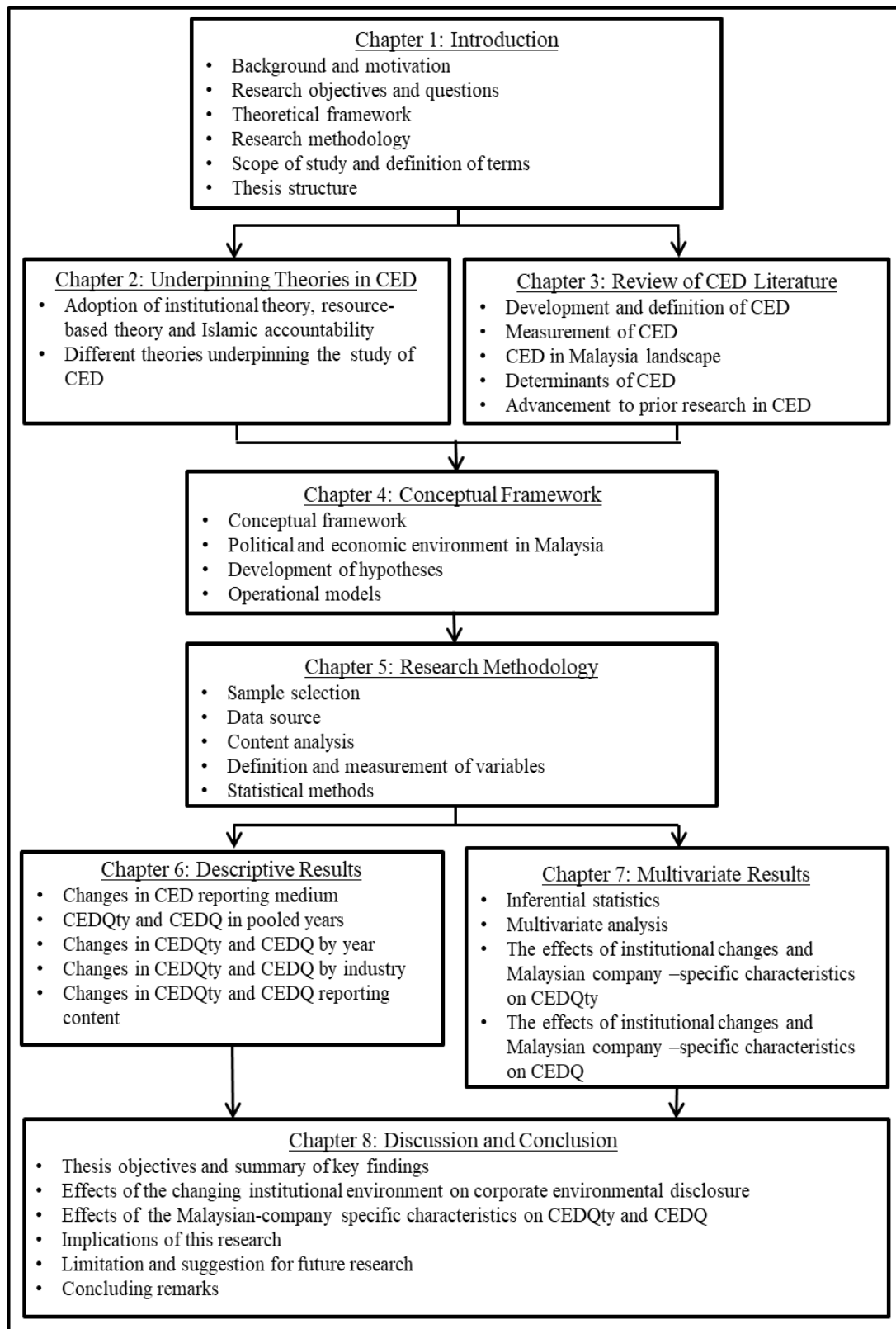
Chapter 5 discusses the methodological approach of this thesis by outlining the sample and data sources, explanations of the content analysis, measurement of variables and statistical analyses based on RO1 (in Chapter 4). This chapter provides the research design that is relevant to achieving RO2 and RO3.

Chapters 6 and 7 present the results of this thesis. While Chapter 6 provides descriptive results to address RO2, Chapter 7 presents multivariate results to address RO3.

Chapter 8 engages in the discussion and the formation of conclusions drawn from Chapter 6 and 7 in relating the results to the stated research questions and objectives. This chapter emphasises the summary of key findings, and provides a discussion on each empirical research objective. This chapter also discusses the implications of this thesis, and suggests directions for future research. The final

section of this chapter provides the concluding remarks on this thesis by emphasising its significant implications for research in the CED and Malaysian context, and for wider audiences.

Figure 1-3: Thesis structure



1.8 Summary

This introductory chapter has presented an overview of the thesis by providing the background and motivation that lead to the formation of research objectives and questions. Following that, this chapter has laid out the theoretical framework, research methodology, significance of this study, and scope of this thesis and definition of terms. The last section of this chapter has provided the overall content of this thesis. The next two chapters review the relevant literature pertaining to the theoretical perspectives and empirical findings in the study of CED.

CHAPTER 2: UNDERPINNING THEORIES IN CORPORATE ENVIRONMENTAL DISCLOSURE

2.1 Overview

This chapter reviews theories used to explain CED research in the prior literature. This is followed by Chapter 3 which extends the review of literature of CED more generally.

The structure of this chapter is as follows. Section 2.2 provides an overview of the main theories that are used in CED studies. They include legitimacy theory, stakeholder theory and agency theory. While these theories are most commonly used by other researchers in the existing CED research, a different set of theories is more appropriate for this thesis. These theories are institutional theory, resource-based theory, and Islamic accountability. Section 2.3 justifies the use of a multi-theoretical lens, that is, institutional theory, resource-based theory, and Islamic accountability theory as the theoretical foundation for analysing the patterns and factors influencing CEDQty (corporate environmental disclosure quantity) and CEDQ (corporate environmental disclosure quality) in the context of Malaysia. This is because many scholars assert that the application of more than one theory is likely to generate fresh understanding and provide an insightful explanation of CED, rather than a single theory which limits the ability to capture other factors that could enhance or impede CED (Cairney, 2013; Clarkson, Overell, et al., 2011). Finally, Section 2.4 summarises the chapter.

2.2 Theories Underpinning the Study of CED

Globalisation has intensified attention on firms to exercise CSR (corporate sustainable responsibility). In line with this, scholars have proposed a number of theoretical perspectives in understanding CSR and the reporting perspective of CSR, that is, CSD (corporate sustainability disclosure). Some key theories used in CED research based in the Western countries include legitimacy theory (Cho and Roberts, 2010; de Villiers and van Staden, 2006), stakeholder theory (Elijido-Ten, 2009b; Roberts, 1992), and agency theory (Gray et al., 1995a; Ness and Mirza, 1991).

2.2.1 Legitimacy Theory

Legitimacy theory proposes that one of the motivation for environmental disclosure is the desire to legitimise business operation (Deegan et al., 2002). Legitimacy refers to ‘a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions’ (Suchman, 1995, p. 574). Although this concept is shared in institutional theory, legitimacy theory and stakeholder theory, the interpretation of legitimacy in each individual theory varies.

Legitimacy theory posits that there is a social contract between a firm and society (Patten, 2002) where it is noted that society represents communities at large. Within this contract, as long as a firm behaves according to the society’s desired value system, the firm will continue to survive (Suchman, 1995). This is because the society provides firms with the legal social standing and supplies labour and resources (Shocker and Sethi, 1973). Without this societal support, firms’ existence, continuity and growth are impaired. In return, firms are expected to exercise behaviour and activities that are desirable by the society. Legitimacy theorists consider social legitimacy as a resource on which a firm depends for survival (Deegan, 2014; Dowling and Pfeffer, 1975). Therefore, it is crucial for the firm to

continuously establish congruence between the firm's value system and the society's value system in which the firm inhabits.

Firms and society are subject to change over time, as are a firm's value system and a society's value system (Deegan, 2014). The disparity between both value systems indicates a legitimacy gap. It varies among firms because of differences in the firms' visibility and dependability on social and political support (Dowling and Pfeffer, 1975; Freedman and Jaggi, 2005). Failure to attend to the legitimacy gap could lead to enormous implications, including difficulties in securing funding from debtholders and shareholders, difficulties in hiring talented staff, increased monitoring by regulators and product boycotting by customers (Guidry and Patten, 2010; Neu et al., 1998; Patten, 2002). Thus, closing the legitimacy gap is important to assure a firm's continual survival (Dowling and Pfeffer, 1975; Guthrie and Parker, 1989). For that reason, some studies have documented that firms use disclosures such as CSD to close the legitimacy gap (Cormier et al., 2005; O'Donovan, 2002; Tilling and Tilt, 2010). For such disclosures, firms may use various communication channels to convey information and shape societal perceptions (Cho et al., 2012; Freedman and Jaggi, 2005; Magness, 2006).

Legitimacy theory explains the purpose of disclosures such as CSD is to gain, maintain and repair legitimacy (Lindblom, 1994). Lindblom (1994) suggested four legitimization strategies that a firm can choose in achieving these different legitimacy objectives. First, a firm provides disclosure to inform the society about changes in its actual behaviour that is aligned with the societal expectation. Second, disclosures are utilised to change the society's perception about the social and environmental performance of a firm. However, the firm does not necessarily change its actual behaviour. Third, a firm uses disclosure to create a positive impression about its social and environmental legitimacy through symbols, values and institutions. Finally, a firm offers disclosure to divert public attention from the issues of social and environmental concern by highlighting other accomplishments.

Legitimacy theory has been popular in CSD studies because it postulates that firms provide CSD to achieve legitimacy objectives by employing different legitimization strategies according to their own needs (Deegan et al., 2002; Deegan and Blomquist, 2006; Gray et al., 1995a; Patten, 1992). However, differentiation in the link between each legitimacy objective and legitimization strategies is still underdeveloped. Furthermore, some empirical studies fail to prove that legitimacy is the main motivation for disclosure (Ahmad and Haraf, 2013; Guthrie and Parker, 1989; Haji, 2013a; Wilmshurst and Frost, 2000). This implies that a legitimacy motive alone is inadequate to promote disclosure.

Additionally, there has been a critique of legitimacy theory that it assumes a pluralistic society and therefore disregards expectations from different groups of society (Deegan, 2006). Despite this assumption of pluralistic society, Parker (2005) contended that this theory ignores the concepts of accountability and transparency although both concepts are central in the relationship between firms and society. Moreover, legitimacy theory tends to focus on addressing the legitimization objectives by closing the legitimacy gap while neglecting the institutionalisation of social, political and economic contexts. Legitimacy theory also overlaps with institutional theory, resource-based theory and stakeholder theory. For the purpose of this thesis, legitimacy concepts are helpful in explaining why firms provide disclosure. However, legitimacy theory is considered less relevant because the interpretation of legitimacy does not fit with the research direction. This is marked by a lack of emphasis on how legitimacy theory explains the reason for changes in social values of the firm and society over time.

2.2.2 Stakeholder Theory

Stakeholder theory is derived from the social-political theories with the assumption that firms are a part of the social system. The existence and survival of firms not only dependent upon their organisational objectives, but also on economic, political and social objectives of the social system (Gray et al., 1995b). Upholding this

assumption, firms therefore have an impact on, and are affected by the society in which stakeholder theory terms are stakeholders. Freeman (1984, p. 46) defines stakeholders as ‘any group or individual who can affect or is affected by the achievement of the organisation’s objective’. They include (but is not limited to) shareholders, employees, customers, suppliers, government, trade associations, political groups and communities (Donaldson and Preston, 1995).

Given a broad range of stakeholders, stakeholder theory specifies that a firm has multiple social contracts simultaneously because it fragmenting society into different groups of stakeholders. Firms are assumed to know how to balance these various social contracts (Deegan, 2014) because stakeholders have diverse interests and characteristics, both of which are transitory and fluctuate over time (Verbeke and Tung, 2013). Thus, stakeholder theory stresses the role of stakeholder management (Jones, 1995; Roberts, 1992). By contrast, legitimacy theory posits a single social contract of a firm and society.

In managing stakeholders, Freeman (1984) offered four techniques: exploitation, defence, swinging and reinforcement. Firms can implement these techniques to develop good stakeholders relationships by involving in on-going argument, mutual understanding and aligning firm actions with stakeholder values, and combining different actions as continuous effort (Huang and Wang, 2011; Perez, 2015; Yahya and Ha, 2013). This relationship is particularly important as the role of stakeholder management is to balance various social contracts by capturing a diverse value creation to benefit stakeholders (McVea and Freeman, 2005).

Firms may use corporate disclosures including CED to communicate their stakeholder management. Therefore, the motivation for disclosure by companies is to manage the various interests of their stakeholders so that they gain or maintain support from these stakeholders. Studies have shown that disclosures through annual and sustainability reports are influential communication channels in gaining or maintaining support from particular groups of stakeholders (Asif et al., 2013; Deegan and Blomquist, 2006; Michelon and Parbonetti, 2012). Indeed, some

scholars have found that CSD reported in both annual and sustainability reports as a successful medium of stakeholder engagement in explaining a firm's behaviour (Branco and Rodrigues, 2007; Roberts, 1992).

CSD can be treated as either an instrument for ethical accountability (normative) or strategic management (managerial) (Donaldson and Preston, 1995; Freeman, 1999; Freeman and Phillips, 2002). While the former centres on the moral right of stakeholders, the latter professes that the continuity of a firm is supported by stakeholders' power. The normative perspective of stakeholders adopts an accountability perspective (Gray et al., 1988) that assumes firms have a moral obligation to all stakeholders. They are required to treat each stakeholder fairly because each of them has equal rights, and their rights are intrinsic (Deegan, 2014). This means firms should not have a preference for specific groups, even if a conflict of interest arises. Firms can display how they exercise equal rights through disclosure by giving similar information rights to all stakeholders, even if they do not request that information.

In contrast, the managerial perspective of stakeholders considers disclosure as a strategic management instrument (Donaldson and Preston, 1995). Firms decide on 'what and how' to report based on the stakeholder power (Prado-Lorenzo, Gallego-Alvarez, et al., 2009; Sweeney and Coughlan, 2008; de Villiers and van Staden, 2011). This means firms will not give equal rights to all stakeholders. Instead, they will respond only to those stakeholders who are critical for their continuance and survival. This stakeholder power is structured according to the level of a firm's dependence (Deegan, 2014; Jamali, 2007). Mitchell et al. (1997, pp. 865–869) suggested three attributes that constitute this power. The first attribute refers to the extent to which a party has or can gain access to 'coercive, utilitarian, or normative means, to impose its will in a relationship'. This is labelled as power to influence. The second attribute is legitimacy relationships between firms and stakeholders. Although the definition of legitimacy aligns with Suchman (1995), stakeholder theory is more specific in identifying how firms deal with different groups of stakeholders to gain, maintain or repair legitimacy. It stresses how legitimacy

relationships involve multiple levels of social systems including individual, organisational and societal. The final attribute is the urgency of stakeholders' claim on firms. That is, the degree to which stakeholders claims require immediate attention from firms.

Empirically, scholars have used stakeholder theory in CSD by emphasising stakeholder power (Belal and Owen, 2007; Neu et al., 1998; Roberts, 1992; Ullmann, 1985; Vormedal and Ruud, 2009). This is based on how managers, as the agent of firms, define the power of stakeholders. Findings of prior studies suggest that managers' perceive financial stakeholders and government regulators as powerful stakeholders. Thus, corporate managers provide CSD in response to the demands from such powerful stakeholders. They perceive that if they fail to furnish CSD, these powerful stakeholders will restrict firms access to financial resources and impose regulatory requirements, and resulting unfavourable situation for the firms. To avoid this adverse situation, firms use CSD as a strategic mechanism to manage their stakeholders. The focus on managing stakeholder power has pointed to the managerial perspective of stakeholder theory. However, Deegan (2014) commented that it is unrealistic for any study to distinguish both perspectives. This is due to the view that managers may be driven by a combination of performance-based reward and ethical consideration in CSD decisions.

Although stakeholder assumes firms' decisions depend on stakeholders power, it is problematic for firms to decide the extent of stakeholders power and benefit that their stakeholders should receive. Moreover, it is difficult for firms to determine if the stakeholder's power and associated benefits are sufficient (Key, 1999; Stieb, 2009). Stakeholder theory also fails to explain how different stakeholders derive their pressures so that they can influence CED. Given the purpose of this thesis is not to look at stakeholder management, stakeholder theory is therefore considered less relevant for this thesis.

2.2.3 Agency Theory

Agency theory is developed from the conventional economic theory that assumes firms provide CSD as a means to minimise future agency costs arising from regulation or legislation (Gray et al., 2001). Agency costs include monitoring costs, bonding costs and residual costs that stem from the agency contract between principals and agents (Subramaniam, 2006). Jensen and Meckling (1976, p. 309) defines agency relationship as a relationship ‘in which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent’. The contract exists as a result of the separation of ownership and control of the firm (Fama and Jensen, 1983), where for example, owners or shareholders are the principals, and managers, who control the firm, are the agents.

Eisenhardt (1989) showed that agency contracts assume that principals and agents are rational actors. Principals (e.g., shareholders) have to trust that managers will act in their best interest to maximise wealth and welfare. However, in certain circumstances both shareholders and managers can be trapped in an agency conflict. This arises because of diverging objectives of both parties (Eisenhardt, 1989; Hill and Jones, 1992). Instead of prioritising shareholders’ interest, managers’ personal interest may outweigh the shareholders’ interest. This occurs because agency relationships result in information asymmetry: managers possess first-hand information about a firm instead of stakeholders (Johansson and Malmstrom, 2013; Volkman and Henebry, 2010). Given this condition, shareholders therefore impose corporate disclosure such as CSD in monitoring managers’ behaviour and risk-taking attitudes to limit this opportunistic behaviour (Frost, 2007; Guthrie et al., 2006; Haji and Ghazali, 2013a).

Managers are rewarded, based on either behaviour-oriented compensation (e.g., salaries, allowances) or outcome-oriented compensation (e.g., bonus-plan, share option) for efficient dissemination of market information such as CSD (Eisenhardt,

1985, 1989). In this way, agency theory helps in identifying the most optimal principal-agent contract for CSD.

Prior studies (e.g. Cormier et al., 2011) found that CSD is capable of decreasing information asymmetry between principals and agents. To stimulate and monitor appropriate disclosure, corporate governance mechanisms play a monitoring role in curtailing opportunistic behaviour by managers (Bear et al., 2010; Taylor et al., 2008). Exceptions are the studies by Ben-Amar and McIlkenny (2015), Ghazali (2007) and Rupley et al. (2012) which found the negative effect of corporate governance on CED.

2.3 A Multi-Theory Perspective on CED

This thesis adopts a multi-theory perspective on CED which integrates institutional theory, resource-based theory and Islamic accountability. The integration of these theories in this thesis is most appropriate to explain the changes in patterns of CEDQty and CEDQ, and how institutional changes and company-specific characteristics influence CEDQty and CEDQ in the Malaysian context. Institutional theory becomes the anchor of this thesis because of its strength in offering multiple levels of institutional analysis, and recognising that organisations and institutions change over space and time. This provides an explanation as to how and why changes in CEDQty and CEDQ are occurring, and how associated factors are influencing both practices. Based on these different levels of analysis, institutional theory is integrated with the resource-based theory and Islamic accountability into the conceptual framework because both theories provide alternative explanations to describe CED practices (Section 4.2). A detailed review and explanation of each of these theories is provided below.

2.3.1 Institutional Theory

Institutional theory (in its various forms) offers a useful framework to interpret organisations and organisational structures (Suddaby, 2010). According to institutional theory, when organisations incorporate expectations of society into practices, they can increase their legitimacy and long-term survival (Meyer and Rowan, 1977). These expectations include how firms should behave in relation to CSR and CSD. These expectations that shape organisational structures are derived from the institutional environments from which an organisation inhabits. Because of this, institutional theory gives emphasise to the interaction of organisation with the political and economic institutional environments, the effects of constituents expectations on the organisation, and the integration of these expectations into the organisation's cultures and practices (Dillard et al., 2004).

Central to institutional theory is the concept of institutions. Scott (2014, p. 56) defined an institution as a social structure:

Comprising regulative, normative, and cultural-cognitive elements, that, together with associated activities and resources, provide stability and meaning to social life.

Zucker (1987) noted institutions and, indeed, organisations are multifaceted. They contain multiple institutional levels that involving structures and processes, ranging from the world system, country, and organisational field at macrolevel, to organisation-level at microlevel (Scott, 2014). While the world system focuses on structures and processes at international level, the country level emphasises societies and nation-states (Campbell, 2007; Meyer et al., 1997). An organisational field level refers to the analysis concerning a group of organisations that participate in a common meaning system (DiMaggio and Powell, 1983). Meanwhile, in organisational-level scholars have concentrated on specific organisational processes, while the analysis at organisational subsystems includes shared schemas and identities of people (Scott, 2014). The differentiation of levels of analysis is

useful in operationalizing the institutional structures and processes, and in explaining behaviours (including CSD) that follow from these structures and processes. Despite this distinction, activities and meanings of each level are related to other levels, thus, implying the existence of institutional pressures.

According to Meyer and Rowan (1977, p. 341), ‘the processes by which social processes, obligations, or actualities come to take a rulelike status in social thought and action’ explain how institutions become institutionalised. Scott (1987) discussed how institutions that have experienced the process of instilling value, and the process of creating reality over space and time. These processes engage constituents (individual and collective containing state, professions, interest groups and public opinion), and, when coupled with carriers of institutions (symbolic systems, relational systems, activities, and artifacts), will determine the elements of rulelike status (Scott, 1987).

The rulelike status embodies regulative, normative and cultural-cognitive elements that Scott (2014) refers as pillars of institutions. These three pillars exist to provide contexts that empower and constrain the structure and actions of acceptable behaviour. This embraces the existence of top-down influences on structure and actions of bottom-up constituents. The bottom-up constituents and structures respond to the top-down influences according to their perception and interpretation of the top-down influences in the contexts within which they operate (Oliver, 1991). Due to interaction between the top-down influences and bottom-up responses, institutions undergo change over space and time. This involves the processes of institutionalisation and deinstitutionalisation that occurs within and across multiple institutional levels (Jennings and Hoffman, 2017; Zucker, 1987). Scott (2014) explains the reasons for change are not only due to conflicts and contradictions between the elements of institutions, but also because of external shocks such as financial crises and wars.

Further, institutional theory argues that when firms ignore institutional pressures (both visible and invisible), there are possibilities of losing legitimacy, resources,

and stability which will threaten their long-term survival (Meyer and Rowan, 1977). Thus, from the lens of institutional theory, the formation of institutional pressures for reporting can be seen as the process of institutionalisation. How each firm report CED is a matter of an organisation's decision.

In explaining how an organisation responds to institutional pressures, Scott (2014) noted that institutional pressures are heterogeneous, resulting from differences in the attributes of institutions (such as coercive, normative and mimetic mechanisms). These institutions are defined by the political and economic institutional environment which an organisation inhabits. Hoffman (2001) argued that when these three institutions form a composite of institutional pressures at a particular time, all firms are experiencing homogeneous (isomorphic) institutional pressures for CED. Instead of expected homogeneous responses for CED within the same organisational field, each firm has a different way of perceiving institutional pressures for CED, as well as of responding for CED. Hoffman (2001) further justified that this difference was the result of sense-making processes of constituents who interpret and define institutional pressures from their view. This view forms a collective cognitive frame within an organisation, as well as within an organisational field. This explains how differences in CED behaviour among firms could occur. Delmas and Toffel (2004) complemented Hoffman (2001) by suggesting that the collective cognitive frame represented by company-specific characteristics could influence environmental management practices. Following this logic, company-specific characteristics could also influence CED. This would determine how company-characteristics interpret and respond to institutional pressures for CED at different levels of institutional analysis.

Earlier, Scott (2014) described that institutional pressures are represented by the three pillars of institutions: regulative, normative, and cultural-cognitive. According to DiMaggio and Powell (1983), regulative describes coercive pressures, normative relates to normative pressures, and cultural-cognitive explains mimetic pressures. While the following paragraph will elaborate the distinction in the attributes of each institution, it should be noted that it is difficult to isolate the effect

of each institution because they interweave each other (Scott, 2014). Nonetheless, Hoffman (1999) suggested that any of these three institutions can be more significant than others at a specific time.

2.3.1.1 Regulative (Coercive) institutions

The regulative institutions embrace rules, laws and sanctions (Scott, 2014). This institution stresses that compliance to rules and laws is expedient, otherwise sanctions may apply. This will eventually expose an organisation to legitimacy threat. As such legitimacy reflects a condition that an organisation complies with legal requirements or market pressures (Deegan, 2014). In addition to the formal pressures based on rules or market competition, DiMaggio and Powell (1983) asserted that regulative institutions could include informal pressures based on agreements and codes of conducts. Both the formal and informal pressures are exerted on organisations through coercive mechanisms by the government or powerful constituents upon which organisations are dependent, and by cultural expectations of the society within which organisations inhabit. The government or powerful constituents normally derive power from political and economic influences that are associated with the social context of institutional environments (DiMaggio and Powell, 1983; Kolk et al., 2008; Roberts, 1992).

Regulative institutions in the context of CED would include regulation and enforcement of reporting, as well as threats for not complying with the regulation. The primary mechanism of control is through coercive pressures. Delmas and Toffel (2004) described that coercive pressures can come from various government bodies (that have the power to endorse and enforce regulations), customers and suppliers (that emphasise specific requirements for a competitive market), community and interest groups (that exercise coercive pressure through their vote in local and national elections, as well as supporting environmental activism and lawsuits), and industry sectors (where market concentration exist and the influence of specific industry requirements is dominant). When organisations comply with those coercive mechanisms, they will gain and maintain legitimacy within the social

context of the institutional environment. Eventually, this will lead to long-term survival as legitimacy gives them a ticket to acquire and maintain organisational resources, and achieve stability (Meyer and Rowan, 1977). This perspective can be matched with a resource-based view that emphasises resources are central in creating and changing organisations and institutions (Oliver, 1991, 1997).

2.3.1.2 Normative institutions

The normative institutions reflect certain expectations or social obligations of constituents that result from normative values and norms (Scott, 2014). Scott (2014) elaborated that values indicate preferred or desirable standards of structures or behaviours, while norms refer to the way values are exercised. Normative institution considers organisations will gain legitimacy when they fulfil social obligations of morally governed values and norms (DiMaggio and Powell, 1983). Hoffman (1999, p. 353) explained social obligations can stem from compliance to pressures related to rules of thumb, standard operating procedures, occupational standards, and educational curricula. He extended this by indicating that universities, professional institutions and trade associations are examples of a normative institution. Compliance with them is indicatively through certifications, accreditations, professional endorsement, and formal education (Deegan, 2014).

2.3.1.3 Cultural-cognitive (Mimetic) institutions

The cultural-cognitive institutions focus on the cognitive frame of humanity that consist the elements of taken-for-grantedness and shared understanding (Scott, 2014). According to neoinstitutional theorists, this cognitive frame is the result of beliefs, norms and rules that comprises of symbols, cultural rules and frameworks in guiding human behaviours (Hoffman, 1999; Scott, 2014). In determining the cultural-cognitive institution, DiMaggio and Powell (1983) contended that due to the existence of uncertainty about the institutional environment, an organisation will emulate the actions of other organisations that it has perceived as legitimate. In this sense, Hoffman (1999) insisted the interpretation of legitimacy is

unquestionable because the organisation is so ingrained in this taken-for-granted perspective that it will mimic acceptable behaviours without doubt.

Despite the emphasise that institutional theory puts on understanding the link between institutions and organisations, Elsbach and Sutton (1992) had critiqued that institutional theory offers an incomplete view about how organisations muddle through inconsistent institutional pressures resulting from different structures of institutions. In a recent work, Wooten and Hoffman (2016) called for more empirical evidence on analysis based on the organisational field level by focusing on collective rationality within the field. This is addressed earlier by Scott (2014), who is a prominent institutional theorist. In particular, he urged further exploration of an organisational field level for widening the understanding of institutional pressures and mechanisms at this level. In addition, he also commented that there have been relatively few studies addressing the influence of religion at multiple levels of institutional analysis.

Based the discussion so far, institutional theory appears to align itself with the research direction of this thesis. This theory offers a detailed understanding how one can view the social context that influences the activities of organisations through institutional environments of CED by analysing them at multiple institutional levels. This thesis attempts to address three levels of institutional analysis. The first level involves the combination of the political and economic environments at international and Malaysian level. The next level explores the organisational field level of CED that consists of various institutional constituents within the political and economic environments and individual organisations with organisation-specific characteristics. This corroborates with the call by Wooten and Hoffman (2016) on more empirical studies at the organisational field level. The final level investigates the same company-specific characteristics at individual organisation level. Since this thesis introduces the influence of religion, the multiple levels of institutional analyses of this study allow it to explore religion based on top-down influences and bottom-up responses. This not only marks the strength of

institutional theory, it answers the call by Scott (2014), who requested more research on religion-based influence in institutional theory.

Moreover, institutional theory also provides a basis for understanding how institutional environments facilitate different structures of institutions, which in turn exert pressures for CED on organisations. In addition, it explains how organisations respond to institutional pressures for CED, and how institutional changes for CED occur over time. Following such justifications, this thesis derives the research framework (in Chapter 4) primarily from institutional theory. However, institutional theory alone is insufficient to explain the phenomenon of CED in this thesis. Because of this, this thesis blends resource-based theory and Islamic accountability into institutional theory to further support the perspective of resources (for creating and changing organisations and institutions), and accountability in CED (for understanding how religion-based accountability is embedded in the structures of institutions).

2.3.2 Resource-based Theory (RBT)

Resource-based theory⁸ or RBT posits that firms are a bundle of resources (Wernerfelt, 1984). In the context of reporting, resources are important for providing CSD (McWilliams and Siegel, 2011). Resources are also crucial for creating and changing organisations because organisations cannot change by themselves. It is widely suggested that when firms have resources that are valuable, rare, inimitable, non-substitutable and imperfectly mobile, they will achieve competitive advantage (Barney, 1991; Hart, 1995; Peteraf, 1993). This can arise when a firm possesses and knows how to exploit its resources so that it has control in shaping those resources to become heterogeneous resources that are unique to

⁸ The term resource-based theory is used instead of resource-based view because Barney et al. (2011) argued that it has reached the level of maturity as a theory. This argument is based on four points. First, scholars have used the term resource-based theory extensively. Second, there is a prominent spin-off perspective of the theory. Third, this theory has been integrated with other theories. Finally, the inquiry of the theory evolves and progresses.

each firm (Penrose, 1959; Wernerfelt, 1984). Alternatively, the firm needs to fulfil particular requirements to obtain resources that are controlled externally by other parties.

Wernerfelt (1984, p. 172) defined resources as ‘those (tangible and intangible) assets which are tied semi[-]permanently to the firm’. Examples of tangible assets are physical and financial assets, while intangible assets include corporate reputation or image, corporate culture, employee’s knowledge, experiences and skills, and governance structure (Branco and Rodrigues, 2006).

Barney (1991, p. 102) expanded the definition of resources to include ‘all assets, capabilities, organisational processes, firm attributes, information, knowledge, etc.’. Resources can also be ‘input into the production process’ that become the source of firm’s capabilities (Grant, 1991, p. 118). According to Russo and Fouts (1997, p. 537), capabilities are a firm’s ‘abilities to assemble, integrate, and manage these bundle of resources’. Capabilities explain the organisational learning through the learning and experience of people in the firm (Mathews, 2003). Teece (2014) categorised capabilities as ordinary and dynamic. Ordinary capabilities refer to technical functions involving the administrative, operational and governance of a firm in accomplishing tasks. Dynamic capabilities refer to a firm’s ability ‘to integrate, build and reconfigure its internal and external competencies to address rapidly changing environment’ (Teece et al., 1997, p. 516). A dynamic capability defines what is a resource. Arguably, the definition of resources is still debatable (Newbert, 2007). Nevertheless, from these definitions several crucial elements can be identified: first, resources are the accumulation of assets and capabilities; second, resources can be both tangible and intangible to firms; and finally, resources can be captured as input and output.

The process of acquiring and generating resources requires interactions between intra-organisational resources, and between organisation’s internal resources and its external environment (Penrose, 1959). These interactions are a function of intra-firm decision-making and external strategic factors which involve multiple and

complex business processes that may be dissimilar from one firm to the other (Conner, 1991). Some examples of business processes are: the process of undertaking corporate social responsibility (CSR) activities, and the process of reporting CSR activities (i.e., corporate social disclosure (CSD)). The purpose of these business processes is premised on the assumption of RBT that the firm's interaction with external environment is to obtain stability and legitimacy (Oliver, 1991).

By focusing on the need for a fit between the organisational internal resources and external environments, RBT provides an explanation that the differentials in the way each firm conceive and implement business strategies are because the existence of heterogeneous resources in a firm (Barney, 2001), and the variation in the use of those resources (Oliver, 1997). In regard to heterogeneous resources, some scholars have viewed that CSR can lead to sustainable competitive advantage (Li and Toppinen, 2011; McWilliams and Siegel, 2011). In this setting, it appears that CSR itself can be considered as both input and heterogeneous resource in attaining a competitive advantage. Comparatively little of prior research considers CSD (or CED) as a heterogeneous resource. Within this limited evidence, Toms (2002) empirically validated that CED contributes to environmental reputation (a proxy for competitive advantage and reputational resources by itself). Consistent findings also were reported by Hasseldine et al. (2005).

The study by Amran et al. (2014) found that intangible resources of firms including vision and mission, CSR committee, and collaboration with NGO have some effect on sustainability reporting quality in the Asia-Pacific region. This implies that CSD (or CED) can also be regarded as an output and heterogeneous resource for a firm which derives from a set of input resources. Some studies have classified raw natural resources, skilled manpower and industry sector as input resources that would create intangible resources like know-how for CSR activities and CSD (Bhattacharyya, 2010; Cordeiro and Tewari, 2014). In another study, CSR activities such as emission prevention appear to be an important input resource for a subsequent financial performance (Hart et al., 1996). The above studies suggest that

the classification of resources into input and output is depending on the purpose of a study, which is in line with what is hypothesised in this thesis. Such differentiation provides clarification how one can view the heterogeneity in resources between firms.

There are arguments that the heterogeneity in resources are more transparent through intangible resources than tangible resources (Ang and Wight, 2009; Branco and Rodrigues, 2006). Intangible resources such as organisational culture, organisational structure, copyrights, trademarks, reputational assets and political acumen require time for accumulation, thus are difficult and costly to create (Russo and Fouts, 1997). Amran et al. (2014) argued that organisational culture involves people and systems. Since people embrace multi-cultural perspectives, RBT offers an insight into how the personal values of people in a firm can be linked to CSR values in the decision-making process of a firm for explaining how heterogeneity in resources arises (Branco and Rodrigues, 2006). This marks the strength of RBT.

RBT suggests that each firm has its own requirement in utilising resources and the productivity of those resources differs from one activity to another activity or from one firm to another firm (Branco and Rodrigues, 2006; McWilliams and Siegel, 2001). For example, one firm may use a different set of resources as input in responding to CSR. The same firm may use a different set of resources as input to provide CSD, a reporting perspective of CSR. This leads to a variation in the use of resources. Baumann-Pauly et al. (2013) found that the same resources (the commitment of the management, their internal structures and procedures, and external collaboration) could affect smaller firms' CSR activities but not their CSD, whereas for larger firms, the same input resources affect CSD, but not CSR activities. Their findings suggest that differentiation in the use of resources for different activities among firms emerge from how they perceive the functionality of such resources for specific (e.g., CSD or CSR) activities. This corroborates with Oliver (1991) who considered resources as constraints and options for responding to institutional pressures for specific activities.

Following Oliver (1991), as social actors in social systems, firms are confronted with multiple and sometimes incompatible demands for carrying out CSR from external actors. They require resources to respond to the external demands. However, some firms may have limited resources to perform specific activities (e.g., CSD or CED) due to a lack of control for scarce resources which are subject to the restriction of resource exchange between the firm and external environments. This explains why a firm encounters constraints of resources. Accordingly, this constraints of resources will influence the decision of a firm in the selection and deployment of resources that manifest its option of responding to specific activities such as CEDQty and CEDQ.

Notwithstanding the important focus on firm heterogeneity, there has been critique of RBT. Oliver (1997) argued that RBT merely puts emphasise on the characteristics of resources to explain the firm heterogeneity, but fails to explain how a firm exercises the selection of resources that leads to such heterogeneity. Moreover, although RBT acknowledges that the acquisition and generation of resources require interaction with external environments, RBT has not explored the social context within which resource selection and deployment decisions are rooted (Branco and Rodrigues, 2006). Nor has RBT concentrated on how this social context could affect variances in specific activities among firms (Oliver, 1997).

Despite the limitations, the emphasis on the internal firm level of analysis in RBT is directly relevant to this thesis. At the firm level, RBT provides justification that resources can be distinguished into input and output resources, and can include both resources and capabilities including dynamic capabilities. Since this thesis examines external social factors and company-specific factors that would influence CEDQty and CEDQ, the classification of company-specific characteristics as input resources would help to explain how such characteristics could encourage firms to provide CEDQty and CEDQ. In this sense, both CEDQty and CEDQ are considered as output resources. The different practices of CEDQty and CEDQ would describe that heterogeneity of input resources could cause the heterogeneity of output resources at different levels of the institutional analysis. The interaction of

resources within each other not only produces output resources, but generates dynamic capabilities of each CEDQty and CEDQ. Therefore, both RBT and institutional theory would complement each other. While institutional theory addresses the weaknesses of RBT in recognising the social context within which resources originate and develop to influence activities of a firm, RBT provides a richer explanation how and why firm heterogeneity arises from the internal context of a firm.

2.3.3 Islamic Accountability

The Western concept of accountability is defined in Gray et al. (1997, p. 334) as ‘the duty to provide an account of the actions for which one is held responsible’. The accountability arises due to society has the rights to information as a result of relationships between groups, individuals and organisations in the society.

In contrast, the Islamic perspective on accountability is established from the relationship between man and God as revealed in the *Qur'an* (the Islamic foundational text). This ultimate accountability to God originates from the meaning of Islam that requires a self-surrender, submission, and absolute belief to the one and only God (Haniffa, 2002; Lewis, 2001). According to the Islamic belief, God is the one and only creator of the whole universe, while humans are only the servants and trustees of God⁹. These dual roles of servant and trustee describe that relationships between humans and the universe, with God exist. Such relationships imply accountability in every aspect of a human’s life through the word ‘account’ (*hisab*)¹⁰ that appears more than 80 times in different verses of the *Qur'an*. Hence, this shows that accountability is vital in the Islamic belief.

⁹ Refer to related verses in the Qur'an, 3:19; 5:3; 16:51-52.

¹⁰ Refer to related verses in the Qur'an, for example, ‘Then indeed, upon Us is their account.’; 88:26; 2:284; 3:19, 199; 6:62, 69; 24:39; 26:113; 38:16; 53:38-39; 74:38-39; 99:7-8.

Humans have a relationship with God in their role as a servant of the God, and hence are accountable to have faith and to worship God¹¹. Meanwhile, in the role as a trustee, humans are accountable to manage the universe by safeguarding the public interest through keeping human interactions in harmony and full of respect¹², and preserving the environment¹³, all of which are salient features of supporting human life (Maali et al., 2006). This means that humans have relationships with fellow humans and the environment. By exercising the role of a trustee, such relationships while dictating social responsibility, are also acts of embracing an accountability to God. This shows that accountability to God is ultimate in Islam, and the implementation of both roles should be parallel. This is because Muslims believe that all good and bad deeds in this world will be judged on the Day of Hereafter¹⁴. Thus, it is important for Muslims to strive for the balance between worldly gains and spiritual rewards. In this way, Islamic accountability in regard to social responsibility is distinct from the Western perspective because it primarily originates from the responsibility to God, rather than from the responsibility to humankind. This also offers an insight into the concept of Islamic social responsibility which is a coercive pressure on Muslims to be ultimately accountable to God, and which also intersects with the sources of pressures in institutional theory.

By concentrating on Islamic social responsibility, firms would exercise reporting (hence, CSD) by relying on humans who are the actors of the firms (directors and employees). As leaders, Muslim directors hold a responsibility for ensuring that firms fulfil their social accountability and full disclosure – the two principles that underlie the Islamic social responsibility (Baydoun and Willet, 1997). Maali et al. (2006) suggested that social accountability involve explicit and implicit contractual obligations between firms, community and the environment. These necessitate the firms to give equal and just consideration to the community and the environment in

¹¹ Refer to related verses in the Qur'an, 2:21; 51:56.

¹² Refer to related verses in the Qur'an, 70:24-25.

¹³ Refer to related verses in the Qur'an, 6:142; 16:5-8, 66, 69-70, 80; 22:28.

¹⁴ Also known as the Day of Judgement, Day of Resurrection, Day of Account, in which Muslims believe all deeds in this world will be accounted for and be judged accordingly in the afterlife.

their actions. By practising the Islamic values as inscribed in the *Shari'ah*, Muslim directors should make decisions that are moderate and can balance the competing needs of self-interest and altruistic actions of firms (Hasan, 2007). In addition, as a reflection of their role as a trustee to God, Muslim directors should ensure that firms make full disclosure of their social accountability by presenting information to members of the community (Baydoun and Willet, 2000; Maali et al., 2006). This is consistent with Jabnoun (2012) who stressed that social accountability is incomplete without accountability that requires transparency and records. In this sense, corporate reporting including CSD should give an indication that Muslim directors and firms are practising Islamic accountability that reflects adherence to the *Shari'ah*.

Since the concept of *Shari'ah* is crucial to Islamic accountability, it is noteworthy to explain what is *Shari'ah*. According to Dusuki (2008), *Shari'ah* is a system of norms, ethics and values that facilitates a more meaningful and purposeful human life. It prescribes a condition of 'what ought to be' by blending faith (*aqidah*), ritual worship (*ibadah*), morality and ethics (*akhlāq*), and legal rulings governing the acts of human being (*fiqh*), as rules and regulations. In Islam, justice and compassion for the community and the environment are among the important values in social responsibility (Hasan, 2007; Siwar and Hossain, 2009). Therefore, when Muslims (including individuals and firms) practise Islamic values, this would reflect that they are upholding Islamic accountability.

Some authors have empirically linked the concept of Islamic accountability with CSD in their studies. The finding by Harahap (2003) based on a case study of an Islamic bank in Indonesia indicated that the bank was not practising Islamic accountability as there was no disclosure relating to justice, the environment, morality and ethics. Haniffa and Hudaib (2007) compared the actual and ideal Islamic ethical disclosure of Islamic financial institutions in different Gulf countries. They found that such institutions provide very minimal Islamic ethical disclosures which signify the lack of Islamic accountability practices. In a different study, Aribi and Gao (2010) compared the CSD made by Islamic and conventional

financial institutions in the Gulf region. Their study revealed that there were significant differences in the level and extent of CSD between both types of financial institutions. Such differences were contributed to by religion related disclosures including *Shari'ah* supervisory board reports, the *zakat*¹⁵ and charity donations, and free interest loans. Haji and Ghazali (2013a) who studied the Malaysian context discovered that the *Shari'ah* companies that they sampled had low CSD. This suggests a lack of knowledge of Islamic values, hence the call for Islamic accountability practices by the sample companies. Despite this, findings in this area are not conclusive because studies that look into this area are still limited (Haniffa and Hudaib, 2010; Othman and Thani, 2010). Moreover, Scott (2014) acknowledged that research on the influence of religion in general, on organisations and institutions is still restricted. This could be due to the decline in the importance of religion in Western societies, where the majority of research has been centered (Baydoun and Willet, 1997).

Islamic accountability is relevant for this thesis because the concept of Islamic accountability offers this thesis an avenue to explore the top-down and bottom-up influence of Islamic accountability at the national and organisational levels in Malaysia. The accountability to God from the Islamic perspective could be intersected with institutional theory through the sources of institutional pressures in requiring the practices of CEDQty and CEDQ to reflect Islamic social responsibility. Although accountability to God would be considered as a coercive pressure and aligned with the changes in institutional environments, the Islamic accountability perspective means this religious pressure can also be considered as normative and mimetic institutional influence, depending on how they perceive such pressures.

¹⁵ The *zakat* is the third pillar of Islam that requires Muslims to contribute a fixed portion of their wealth that are gained through economic transactions, to the community. Contributions to *zakat* are essential to purify such wealth because some portions of the wealth are the right of others. Muslims are required to pay *zakat* once every year.

2.4 Summary

This chapter provides a comprehensive review of key theories in the study of corporate environmental disclosure. This review points to the suitability of a multi-theoretical perspectives on CED in Malaysia. The review of prior literature rationalises the selection of institutional theory as the primary theory for the analysis of corporate environmental disclosure. The main theory is supported by resource-based theory and Islamic accountability to explain and describe the underlying area of interest. The review of empirical findings of corporate environmental disclosure is presented in Chapter 3.

CHAPTER 3:

REVIEW OF EMPIRICAL STUDIES ON CORPORATE ENVIRONMENTAL DISCLOSURE

3.1 Overview

In order to provide a foundation for analysing the changing patterns and factors influencing corporate environmental disclosure (CED) in Malaysia, this chapter reviews the empirical findings of CED at both global and Malaysian levels. This chapter begins with a discussion on the development and definitions of CED at global levels in Section 3.2. The subsequent Section 3.3 reviews the measurements of CED quantity (CEDQty) and quality (CEDQ). Section 3.4 reviews the empirical findings of CED practices in Malaysia while Section 3.5 addresses the factors affecting the CED worldwide. Section 3.6 provides a summary of this chapter.

3.2 Corporate Environmental Disclosure (CED)

Gray et al. (1997) described corporate sustainable responsibility (CSR) as encompassing all aspects of the universe, and firms are responsible to account for how their activities affect the universe, particularly in the area of social and environmental concerns. Accounting for firms' activities is pivotal in discharging their accountabilities to stakeholders due to the separation between ownership and control among owners, management and community. To discharge these accountabilities, firms are required to disclose their CSR information on corporate communication channels, including annual reports (AR), sustainability reports (SR), website, newsletters and community meetings.

Irrespective of the communication channels, Hackston and Milne (1996), and Gray et al. (2001) defined corporate sustainability disclosure (CSD) as the disclosure of information pertaining to financial and non-financial performance that demonstrate a firm's interaction with its physical and social environment. They argued that such interactions are embedded in the firm's aspirations and activities and constitute its public image. Due to a growing awareness of the ways that business can impact the environment, there is a large volume of studies describing CSD, ranging from governance to social and environmental disclosure, mainly based on the requirements of voluntary disclosure (Clarkson et al., 2013; Guthrie et al., 2008).

Following the development of CSD since the 1960s, corporate environmental disclosure (CED) has emerged as an important part of CSD. However, the growth of CED only began ten years after its inception when many researchers began to highlight the need to set-up proper environmental measures and reports (Jones, 2011; Wiseman, 1982). The issuance of the Brundtland Report in 1987 then geared the momentum of CED in a business landscape by implying that a firm is fully responsible for how its business operation affects the natural environment, both at present and in the future (Bebbington and Gray, 2001; Williams, 2014). According to Williams (2014), the future not only refers to the status of a firm, but most importantly, it is about the consequence of the firm's current activities on a natural environment for future generations.

Despite the growth in CED research, very few scholars have clarified the meaning of CED. Berthelot et al. (2003, p. 2) defined CED as the disclosures of company information comprising the elements of environmental management activities, environmental performance and financial consequences of the past, present and future, that result its environmental management decisions and actions. Consistent with Berthelot et al. (2003), Rupley et al. (2012) employed the same definition to determine voluntary CED. Meanwhile, Campbell (2004, p. 108) defined CED as 'disclosures pertaining to the impact that an organizational process or operation may have on the natural environment'. However, Williams (2014) argued that CED is more than just natural environment because it encompasses aspects of the

economy, governance and the social or ethical climate that interact simultaneously to sustain a firm's going concerns, while considering how these may affect future generations.

This thesis limits the definition of CED to the dissemination of information concerning the effect of a firm's economic decisions and actions in the past, present and future, on the natural environment, consistent with that of Berthelot et al. (2003) and Campbell (2004).

CED information should be fully disclosed for use by all stakeholders, because accountability requires transparency of accounting and reporting. In support of this, de Villiers and van Staden (2010) found that shareholders believe that firms 'should' account for their environmental impacts to inform shareholders about the environmental well-being resulting from a firm's operation. Cho and Patten (2013) made a similar contention by arguing that CED is not merely about economic advantage or transparent accountability. Indeed, it is about what a firm 'should do' in preserving the natural environment, and inclusive in this commitment is accounting for the firm's environmental impact. Accordingly, some scholars have regarded CED as a mechanism for discharging the accountability of a firm's environmentally related activities resulting from increased pressure from stakeholders, and concerns about legitimacy and reputation (Adams, 2004; Cormier et al., 2011; Gray, 1992; Rodrigue, 2014).

The increasing awareness of CED at global level is very much indebted to the continuous efforts made by various parties including: the United Nations of Global Compact (UNGC); the World Business Council for Sustainable Development (WBCSD); the Organisation for Economic Co-operation and Development (OECD); the AccountAbility; the Global Reporting Initiative (GRI); and the International Integrated Reporting Committee (IIRC). While the UNGC, WBCSD, OECD and AccountAbility offer principles and standards related to environmental responsibility, the GRI and IIRC are two bodies that give nuanced guidelines for the reporting of CED at organisational level (Beck et al., 2017). The GRI, with its

latest revision of GRI4 (2013), is arguably the leading CED guideline at global level (Gray, 2010). Although the GRI enforcement is voluntary in nature, some researchers have claimed that its popularity was contributed by its comprehensiveness in addressing various CSR aspects as it provides the format, context and content of reporting (Farneti and Guthrie, 2009). Moreover, the GRI guidelines have been established through the coalition of multiple stakeholders, and therefore are viewed as suitable for any company and industrial sector in the standardisation of CSD worldwide (Stubbs and Higgins, 2018). However, despite the efforts described above, the measuring and reporting of CED remain a challenging task for both practitioners and researchers.

3.3 Measurement of Corporate Environmental Disclosure Quantity (CEDQty) and Corporate Environmental Disclosure Quality (CEDQ)

Since CED is largely voluntary, the reporting of CED is subject to the discretion of companies. To report CED, companies need to record and measure CED activities. Notably, this has resulted to CED scholars place great emphasis on discussions relating to the measurement of CED using content analysis, either based on quantity (CEDQty) or quality (CEDQ) (Table 3-1 and Table 3-2). While CEDQty could be measured using volume-based CEDQty and extent-based CEDQty, prior research has measured CEDQ using extent-based CEDQ.

3.3.1 Volume-based CEDQty

Volume-based CEDQty is regarded as the volume of environmental information, which is measured based on different units of analysis including:

- (i) *Words* (Campbell, 2003, 2004; Deegan and Gordon, 1996; Deegan and Rankin, 1996; van der Laan et al., 2005; Neu et al., 1998; Wilmshurst and Frost, 2000);

- (ii) *Sentences* (Hackston and Milne, 1996; Hasseldine et al., 2005; Holland and Foo, 2003; van der Laan et al., 2005; van Staden and Hooks, 2007; Walden and Schwartz, 1997);
- (iii) *Lines* (Patten, 2002; Wiseman, 1982);
- (iv) *Pages* (Adams et al., 1998; Adams and Kuasirikun, 2000; Deegan and Rankin, 1996; Patten, 1992);
- (v) *Proportion of pages* (Adams et al., 1998; Adams and Kuasirikun, 2000; Deegan and Rankin, 1996; Guthrie and Parker, 1989; van der Laan et al., 2005; Patten, 1992); and
- (vi) *Frequency of word occurrence* (Cho et al., 2010).

Table 3-1 summarises scholars who had employed the volume-based CEDQty in their studies. In general, these scholars have assumed that despite the differences in the volume of analysis for CEDQty, the amount of disclosure indicates how significant is reporting to companies. Prior studies (Campbell, 2004; Deegan and Gordon, 1996; Deegan and Rankin, 1996) discovered that companies have tendencies to disclose positive CED than negative CED over time. Companies did so because they believe reporting of negative CED would violate their license to operate (as advocated by legitimacy theorists). Moreover, when companies are experiencing specific events that would impair their legitimacy, there is a high propensity that a company would increase its CED (Campbell, 2004). While the findings of both Deegan and Gordon (1996), and Deegan and Rankin (1996) were based on the sample of Australia companies, Campbell (2004) used the sample of UK companies. Their findings implicitly signify that specific events would fuel institutional pressures for CED which provide support for the use of analysis of institutional pressures in this thesis.

Holland and Foo (2003), and van Staden and Hooks (2007) had measured volume-based CEDQty using sentence count. Holland and Foo (2003) studied both the annual and sustainability reports of the UK and US listed companies in the environmentally-sensitive industries (ESI). They found that there were no significant differences of CED. However, there was a significant difference in their

CED medium. In particular, the UK companies providing more CED in both annual and sustainability reports than the US companies. Holland and Foo (2003) argued that the driving force for the UK companies was management practices favouring user needs by increasing CED in both medium as an act of legitimisation. Conversely, the motivation for US companies was in accordance with legislative pressures that were aligned with the preparers needs. This finding signals that the motivation for CED could be derived from external and internal forces which afford support for examining the factors of CED in this thesis.

In the study based in New Zealand, van Staden and Hooks (2007) reported that annual reports are the most popular CED medium among companies. On average, they reported 156 sentences of CED within various reporting media from 2002 to 2003. Further, van Staden and Hooks (2007) found that volume-based CED was positively associated with the environmental responsiveness ranking. This is explained by legitimacy theory, which posits that companies prepare CED as a preventive measure to avoid any legitimacy concerns. Although these authors did not benchmark their findings with CED in other developed countries, their results indicated that there had been an increase in the number of sentences used to report CED.

By using page count for volume-based CEDQty, Guthrie and Parker (1989) and Gray et al. (1995b) revealed a similar growth trend of CED being disclosed by Australian and UK companies respectively. While Guthrie and Parker (1989) recorded an increase in the average page count of CED by BHP (largest Australian steel industry company) from nil to nearly 0.5 page over a span of 100 years, the top 100 UK companies in the study by Gray et al. (1995b) demonstrated a growing CED from less than 0.5 pages to almost a page within thirteen years. Despite the authors use different theories in explaining the motivation for CED, both studies agree that companies were providing CED because their interactions with society were prompting them to respond to the need to: alter public perceptions about their actual environmental performance; change public perceptions about the industry in which they were operating; and divert public attention from the main environmental

problems. Although not explicitly mentioned, their study addressed that the rising trend of CED was due to the change in institutional environments over time which help reinforce the motivation for investigating the pattern of CED in this thesis.

Adams and Kuasirikun (2000) and van der Laan et al. (2005) used the proportion pages in measuring volume-based CEDQty. Both studies compared the CED practices in different countries. Using a longitudinal analysis, Adams and Kuasirikun (2000) found that the CEDQty of the German companies was higher than the UK companies although the German companies are assumed more secretive than the UK companies. Despite this, their finding support that CED has gained in importance because companies in both countries prioritise CED over other ethical reporting. Similar findings appear in the study of van der Laan et al. (2005) which revealed that CED dominated CSD in the reports of Norway and Denmark companies, but not in the reports of US companies.

Taken together, findings in this section highlight that in addition to the volume-based CEDQty indicates the importance of reporting to companies, it also has reinforced that the changes in the volume of reporting require time. Nonetheless, arguably, the volume-based CEDQty has not provided a meaningful way to interpret the coverage and quality of CED (van der Laan et al., 2005; Unerman, 2000). Some researchers have only utilised the volume-based CEDQty to confirm the internal validity of their disclosure index (Patten, 2002; van Staden and Hooks, 2007; Wiseman, 1982). For example, Patten (2002) used a CED lines count to verify the model fit for the extent-based CEDQty of disclosure index. Patten (2002) found that the explanatory power of extent-based CEDQty is slightly higher than volume-based CEDQty, although both measures of CEDQty are highly significant. This indicates that extent-based CEDQty can be more robust than volume-based CEDQty, which gives weight to the choice of using it for analysis of CED in this thesis.

Table 3-1: Summary of CED (and CSD) volume-based measurement

Scholars	Objectives of Study	CED Quantity: volume-based					
		words	lines	sentences	pages	% of pages	word frequency
Cho et al. (2010)	Relationship between CED in 2002 10-K report, with CEP of 190 US companies using optimism and certainty language scores using impression management theory.						x
van Staden and Hooks (2007)	Relationship between CED in 2002 to 2003 various reporting media, and environmental responsiveness external ratings of 32 companies in New Zealand using legitimacy theory.			x			
Hasseldine et al. (2005)	Relationship between CED in 1999 annual report, and corporate environmental reputation of 139 UK companies using signalling and resource-based theories.			x			
van der Laan et al. (2005)	Compare CSD in 1998 to 1999 annual report of 26 US ESI companies and 32 Danish/Norwegian ESI companies using stakeholder theory.	x		x		x	
Campbell (2004)	Relationship between CED in 1974 to 2000 annual reports, and industry of 10 listed companies in the UK using legitimacy theory.	x					
Campbell (2003)	Comment on CED practices in 10 UK FTSE 100 companies between 1974 and 2000 based on intra- and intersectoral analysis to support legitimization.	x					
Holland and Foo (2003)	Compare CED in 1999 annual and sustainability reports of 19 ESI companies in the UK and 18 ESI companies in the US using accountability framework.			x	x		
Patten (2002)	Relationship between CED in 1990 annual report and CEP data from 1988 of 131 companies in the US using a legitimacy theory.		x				
Tilt (2001)	Relationship between CED in 1994 annual reports and corporate environmental policy in Australia using the socio-political view.			x			
Adams and Kuasirikun (2000)	Compare CED and other ethical reporting of top 10 Germany and top 10 UK companies from 1985 to 1995 using Hofstede's four cultural values.				x	x	
Wilmshurst and Frost (2000)	Relationship between CED with factors affecting decision to report CED within 1995 annual reports of 62 listed companies in Australia using legitimacy theory.	x					

Table 3-1: Summary of CED (and CSD) volume-based measurement (continued)

Scholars	Objectives of Study	CED Quantity: volume-based					
		words	lines	sentences	pages	% of pages	word frequency
Adams et al. (1998)	Relationship between CSD with size, industry, and country based on 150 annual reports from six European countries using legitimacy theory.				x	x	
Neu et al. (1998)	Relationship between CED with the influence of external pressure, the type CED, and actual performance from Canadian listed companies 1982 to 1991 annual reports using institutional, legitimacy, and impression management theories.	x					
Walden and Schwartz (1997)	The effect of public pressures on CED after the Exxon Valdez oil spill in 1988 to 1990 annual reports of 57 Fortune 500 US companies.			x			
Deegan and Rankin (1996)	Type of CED in 1990 to 1993 annual report of 20 companies in Australia which were prosecuted for environmental breach from 1990 to 1993 using legitimacy theory.	x			x	x	
Deegan and Gordon (1996)	Type of CED in the 1991 annual report of 197 companies in Australia, and the trend of CED from 1980 to 1991 annual report of 25 companies from the 197 companies using legitimacy theory.	x					
Hackston and Milne (1996)	CSD practices in 1992 annual report of 47 listed New Zealand companies using legitimacy and agency theories.			x			
Gray et al. (1995b)	CSD practices from 1979 to 1991 of top 100 UK companies using stakeholder and legitimacy theories.				x		
Patten (1992)	The effect of the Exxon Valdez oil spill on CED in 1988 to 1989 annual report of 21 petroleum listed firms in the US using a legitimacy theory.				x	x	
Guthrie and Parker (1989)	CED practices by BHP in Australia from 1885 to 1985 using a legitimacy theory.					x	
Wiseman (1982)	Relationship between CED and CEP of 26 largest ESI firms in the USA in 1972, 1974 and 1976.		x				

Table 3-2: Summary of CED (and CSD) extent-based measurement

Scholars	Measurement of CED/CSD	Unit of Analysis	Dimension and Items	Scoring Rules
Muttakin and Subramaniam (2015)	CSDQty	Not specified	4 dimensions 17 items	0=no disclosure; 1=disclose CSDQty = total score of all 17 items (maximum 17)
Plumlee et al. (2015)	CEDQ	Line	Similar to Clarkson et al. (2008)	Similar to Clarkson et al. (2008)
Clarkson et al. (2013)	CEDQ	Not specified	Similar to Clarkson et al. (2008)	Similar to Clarkson et al. (2008)
Cormier and Magnan (2015)	CEDQ	Not specified	6 dimensions 40 items Similar to Wiseman (1982), Cormier and Magnan (2001), and Al-Tuwaijri et al. (2004)	0=absence; 1=general qualitative;2=specific qualitative;3=monetary or quantitative CEDQ = total score of all 40 items (maximum 120)
Khan et al. (2013)	CSDQty	Not specified	20 items Modify Haniffa and Cooke (2002, 2005), and Ghazali (2007)	0=absence; 1=presence CSDQty= total score of all 20 items divided by maximum score (maximum 1)
Michelon and Parbonetti (2012)	CSDQty	Sentence	178 items Based on GRI 2002, and Epstein and Birchard (2000)	0=absence; 1=presence CSDQty = total score of all 178 items (maximum 178)
Moroney et al. (2012)	CEDQ	Not specified	7 dimensions 44 items Modify Clarkson et al. (2008)	Similar to Clarkson et al. (2008)
Rupley et al. (2012)	CEDQ	Not specified	4 dimensions 60 items	0=absence; 1=presence CEDQ = total score of all 60 items
Clarkson, Overell, et al. (2011)	CEDQ	Not specified	Similar to Clarkson et al. (2008)	Similar to Clarkson et al. (2008)
Cormier et al. (2011)	CEDQ	Sentence	6 dimensions 39 items Similar to Cormier et al. (2005)	Similar to Wiseman (1982) CEDQ = total score of all 39 items (maximum 117)

Table 3-2: Summary of CED (and CSD) extent-based measurement (continued)

Scholars	Measurement of CED/CSD	Unit of Analysis	Dimension and Items	Scoring Rules
Gamerschlag et al. (2011)	CSDQty	Word	2 dimensions 32 items	0=absence; 1=presence CSDQty = total score of all 32 items (maximum 32)
Post et al. (2011)	CEDQty	Not specified	3 dimensions 26 items Modify Clarkson et al. (2008)	0=absence; 1=presence CEDQty = total score of all 26 items (maximum 26)
Beck et al. (2010)	CEDQ	Phrase Clause Theme	12 dimensions 39 items	0=no disclosure; 1=pure narrative and brief; 2=pure narrative and detail; 3=pure quantitative; 4=narrative and quantitative; 5=narrative, quantitative and comparable CEDQ = total score of all 39 items (maximum 195)
Cho and Roberts (2010)	CSDQty	Not specified	2 dimensions 41 items	0=absence; 1=presence CSDQty = total score of all 41 items (maximum 41)
Monteiro and Aibar-Guzmán (2010)	CEDQty	Not specified	16 items	0=absence; 1=presence CEDQty = total score of all 16 items divided by total items (maximum 1)
Sun et al. (2010)	CEDQ	Not specified	4 items	0=no quantification; 1=general quantification; 2=data that could be derived to meet UK Government Guidelines; 3=disclosure that meets UK Government Guidelines
Aerts and Cormier (2009)	CEDQ	Sentence	6 dimensions 39 items Similar to Cormier et al. (2005)	Similar to Wiseman (1982) CEDQ = total score of all 39 items (maximum 117)
Prado-Lorenzo, Rodríguez-Domínguez, et al. (2009)	CEDQty	Not specified	2 dimensions 19 items	0=absence; 1=presence CEDQty = total score of all 19 items (maximum 19)

Table 3-2: Summary of CED (and CSD) extent-based measurement (continued)

Scholars	Measurement of CED/CSD	Unit of Analysis	Dimension and Items	Scoring Rules
Tagesson et al. (2009)	CSDQty	Not specified	3 dimensions 22 items	0=absence; 1=presence CSDQty = total score of all 22 items (maximum 22)
Clarkson et al. (2008)	CEDQ	Not specified	7 dimensions 45 items Based on GRI 2002	0-1 is scoring rules for governance and management systems, credibility, environmental spending, vision and strategy claims, environmental profile, and environmental initiatives 0-6 is scoring rules for environmental performance indicators with: 0=no disclosure; 1=performance data is presented; 2=performance data is presented relative to peers/rivals or industry; 3= performance data is presented relative to previous periods (trend analysis); 4= performance data is presented relative to targets; 5= performance data is presented both in absolute and normalised form; 6= performance data is presented at diaggregate level (i.e., plants, business units, geographic segment) CEDQ = total score of all 45 items (maximum 95) CEDQ hard disclosure = total score of items other than soft disclosures (maximum 79) CEDQ soft disclosure = total score of items in vision and strategy claims, environmental profile, and environmental initiatives (maximum 16)

Table 3-2: Summary of CED (and CSD) extent-based measurement (continued)

Scholars	Measurement of CED/CSD	Unit of Analysis	Dimension and Items	Scoring Rules
Aerts et al. (2008)	CEDQ	Sentence	6 dimensions 39 items Similar to Cormier et al. (2005)	Similar to Wiseman (1982) CEDQ = total score of all 39 items (maximum 117)
Brammer and Pavelin (2008)	CEDQ	Not specified	5 items	0=absence; 1=presence CEDQ = score for each individual item
Branco and Rodrigues (2008)	CSD	Not specified	4 dimensions 30 items	0=absence; 1=presence CSDQty = total score of all 30 items (maximum 30)
	CEDQty		11 items for CED	CEDQty = total score of all 11 items (maximum 11)
Magness (2008)	CEDQty	Not specified	7 items Similar to Magness (2006)	0=absence; 1=presence CEDQty = total score for all 7 items (maximum 7)
Cho and Patten (2007)	CEDQty	Sentence	2 dimensions 8 items Similar to Patten (2002)	0=absence; 1=presence CEDQty = total score of all 8 items (maximum 8)
Cormier and Magnan (2007)	CEDQ	Sentence	6 dimensions 37 items Similar to Aerts et al. (2006)	Similar to Wiseman (1982) CEDQ = total score for all 37 items (maximum 111)
Frost (2007)	CEDQty	Sentence Word	2 dimensions 6 items	0=absence; 1=presence CEDQty = total volume-based word count, CEDQty = total score for all items is not computed
Ho and Taylor (2007)	TBLQty	Not specified	60 items Based on GRI 2002	0=absence; 1=presence TBLQty = total score for all 60 items (maximum 60)
	CEDQty		20 items for CED	CEDQty = total score for all 20 items (maximum 20)

Table 3-2: Summary of CED (and CSD) extent-based measurement (continued)

Scholars	Measurement of CED/CSD	Unit of Analysis	Dimension and Items	Scoring Rules
van Staden and Hooks (2007)	CEDQ	Sentence	6 dimensions 32 items	0=no disclosure; 1=general disclosure; 2=decriptive disclosure; 3=quantitative or monetary disclosure; 4=benchmark against best practice (Score: 0-4 for 19 items; 0-2 for 11 items; and 0-1 for 2 items) CEDQ = total score for all 32 items (maximum 100)
Aerts et al. (2006)	CEDQ	Sentence	6 dimensions 37 items	Similar to Wiseman (1982) CEDQ = total score for all 37 items (maximum 111)
Brammer and Pavelin (2006a)	CEDQty	Not specified	6 items Based on the PIRC Environmental Reporting 2000 surveys	0=absence; 1=presence CEDQty = score for each individual item
	CEDQ			0=absence; 1=presence CEDQ = total score for all 6 items (maximum 6)
Brammer and Pavelin (2006b)	CSDQty	Not specified	3 dimensions 11 items	1-4 is scoring rules for community dimension 1-5 is scoring rules for environmental dimension 1-3 is scoring rules for employee dimension CSDQty = [(sum of score of community dimension divided by 4) + (sum of score of environmental dimension divided by 5) + (sum of score of employee dimension divided by 3)] (maximum 12)
Magness (2006)	CEDQty	Not specified	7 items	0=absence; 1=presence CEDQty = total score for all 7 items (maximum 7)

Table 3-2: Summary of CED (and CSD) extent-based measurement (continued)

Scholars	Measurement of CED/CSD	Unit of Analysis	Dimension and Items	Scoring Rules
Cormier et al. (2005)	CEDQ	Sentence	6 dimensions (revised Cormier and Magnan, 1999) 39 items (revised Cormier and Magnan (1999)	Similar to Wiseman (1982) CEDQ = total score for all 39 items (maximum 117)
Freedman and Jaggi (2005)	CEDQty	Not specified	5 items	0=absence; 1=presence CEDQty = total score of all 5 items (maximum 5)
	CEDQ			1=mention global warming; 2=firm's plan; 3=potential costs / current costs / amount of emissions) CEDQ = total score of all 5 items (maximum 15)
Hasseldine et al. (2005)	CEDQ	Sentence	Similar to Toms (2002)	Similar to Toms (2002)
Al-Tuwaijri et al. (2004)	CEDQty	Not specified	4 items	0=absence; 1=presence CEDQty = total presence of 4 items (maximum 4)
	CEDQ			Similar to Wiseman (1982) CEDQ = total score of 4 items divided by CEDQty (maximum 4)
Toms (2002)	CEDQ	Investment professionals' perceived importance of CEDQ	6 items	0=no disclosure; 1= general rhetoric; 2=specific endeavour-policy only; 3=specific endeavour-policy specified; 4=implementation and monitoring, use of targets, results not published; 5=implementation and monitoring, use of targets and results published CEDQ = total score for all 6 items (maximum 24)

Table 3-2: Summary of CED (and CSD) extent-based measurement (continued)

Scholars	Measurement of CED/CSD	Unit of Analysis	Dimension and Items	Scoring Rules
Patten (2002)	CEDQty	Sentence	8 items	0=absence; 1=presence CEDQty = total score for all 8 items (maximum 8)
Cormier and Gordon (2001)	CEDQ	Sentence	8 dimensions (added in 4 new dimensions as adapted from Cormier and Magnan, 1999) 38 items, (added in 19 new items in the current study as adapted from Cormier and Magnan, 1999)	Similar to Cormier and Magnan (1999) and Wiseman (1982)
Hughes et al. (2001)	CEDQ	Sentence	4 dimensions 23 items (added in 5 items in the current study) Similar to Wiseman (1982)	0=no disclosure; 1=immaterial qualitative (environmental issues were immaterial to financial and results of the operations); 2=non-specific qualitative (vague comment of environmental effects within discussions of other topics); 3=specifically non-quantitative description (impact of something clearly evident); 4=monetary or physical quantitative CEDQ = total score for all 23 items (maximum 92)
Cormier and Magnan (1999)	CEDQ	Sentence	4 dimensions similar to Wiseman (1982) 19 items (added one new item) from Wiseman (1982)	Similar to Wiseman (1982) CEDQ = total score for all 19 items (maximum 57)
Gamble et al. (1996)	CEDQ	Not specified	Similar to Gamble et al. (1995)	Similar to Gamble et al. (1995)

Table 3-2: Summary of CED (and CSD) extent-based measurement (continued)

Scholars	Measurement of CED/CSD	Unit of Analysis	Dimension and Items	Scoring Rules
Gamble et al. (1995)	CEDQ	Not specified	7 items	1=journal entry; 2=footnote discussion; 3=liability or associated cost cannot be estimated; 4=company believes associated costs will not be significant or will not have a material adverse effect on the financial statement; 5=associated costs are significant; 4-6=short qualitative discussion (not in the footnotes and less than a page); 7-10=extended qualitative discussion (not in the footnotes and a page or more) CEDQ = total score for all 7 items in each AR and 10K reports divided by 74 (maximum score 2)
Roberts (1992)	CSDQty	Not specified	Based on the US Council on Economic Priorities (CEP) ratings	0=absence; 1=presence CSDQty = not specified
Belkaoui and Karpik (1989)	CSDQty	Not specified	Based on Ernst and Ernst (1973) surveys of 13 items	0=absence; 1=presence CSDQty = total score for all 13 items (maximum 13)
Wiseman (1982)	CEDQ	Sentence	4 dimensions 18 items	0=no disclosure; 1=general; 2=specific non-quantitative; 3=monetary or quantitative CEDQ = total score for all 18 items (maximum 54)

3.3.2 Extent-based CEDQty

As volume-based CEDQty has a limited capacity to provide a meaningful interpretation of the breadth of CED information, CED scholars have enhanced it to become an extent-based measurement (see Table 3-2). In general, the extent-based CED is arguably portrays a completeness in the reporting of CED because it is not just counting the disclosure, but also measuring the expected information of the CED. This extent-based CED could be in the forms of CEDQty and CEDQ, and both could use either the third party data of CED or a CED index as an instrument for measuring CED. While both extent-based CEDQty and CEDQ could use a similar instrument, the differences between both CEDQty and CEDQ lie in how one devise a scale for assessing the extensiveness of CED items. Since both extent-based CEDQty and CEDQ are using the same instrument, this section will focus on the development of the instrument and the scale for CEDQty, follows by the scale for CEDQ in the next section.

In using the third party data of CED, researchers have obtained the CED data from various sources including the Ernst and Ernst 1973 surveys (Belkaoui and Karpik, 1989), the US Council on Economic Priorities ratings (Roberts, 1992), and the PIRC Environmental Reporting 2000 Survey (Brammer and Pavelin, 2006a) to represent CEDQty. A more recent research by Giannarakis (2014a, 2014b) has proxied CEDQty by using environmental disclosure scores including the water consumption, total waste generation, total greenhouse gases and energy usage data produced by Bloomberg's online database. These four studies offer an alternative proxy for measuring CEDQty by generating CED data from external sources, which provides an indication that CED is being valued by external parties.

In using the CED index for measuring CEDQty, most studies have employed a self-constructed CED index to list environmental information. Notably, this CED index comprises two components. The first component deals with construction of the index designed to capture relevant environmental items, and the second component

is a scale that assesses the extensiveness of these items. This second component differentiates between CEDQty and CEDQ.

In designing the inclusion of environmental items in the CED index, researchers use the environmental information disclosed in CED literature, country-specific disclosure requirements of environmental information, GRI guidelines and/or other benchmarks such as the ISO14000 (Clarkson et al., 2008; Gamerschlag et al., 2011; Gray et al., 1995a; Hahn and Lulfs, 2014; Morhardt et al., 2002; Plumlee et al., 2015). In the seminal work, Wiseman (1982) first developed the CED index by generating 18 items from CED literature. She then classified these items into four dimensions (economic factor, litigation, pollution abatement, and other environmentally-related information), ranging from two items for litigation to six items for environmentally-related information. She found that her sample US companies from ESI had highest propensity of reporting items in pollution abatement dimension than other dimensions. However, she did not provide any justification for the high reporting of this dimension.

A number of later studies have also constructed the CED index through the review of CED literature (e.g. Cho and Patten, 2007; Cho and Roberts, 2010; Patten, 2002). Nonetheless, Wiseman's (1982) approach has been widely used as a basis for improving the CED index in related studies (e.g. Aerts et al., 2006; Aerts and Cormier, 2009; Cormier and Magnan, 1999, 2015; Hughes et al., 2001). For example, Cormier et al. (2005) extended the work of Wiseman by including six dimensions: expenditures and risks; laws and regulations; pollution abatement; sustainable development disclosure; land remediation and contamination; and environmental management, in their CED index. While the first three of these are equivalent to the first three dimensions in Wiseman, the last three dimensions represents an expansion of the last dimension in Wiseman. Further, they have added 21 new items ranging from three for sustainable development disclosure to nine for environmental management. Using a sample of German companies for reporting year from 1992 to 1998, their results indicated that of their six dimensions, companies had highest disclosures in both environmental management and

pollution abatement, with the lowest disclosures in land remediation and contamination, and laws and regulations. Again, similar to Wiseman (1982), Cormier et al. (2005) did not justify why companies have had high or low tendency for reporting specific dimension.

Other studies have designed their CED index based on a combination of CED literature and country-specific disclosure requirements of environmental information. For example, Magness (2006, 2008) was able to measure CEDQty in Canada using only seven items, to find that the Canadian gold mining companies increased their overall CED after experiencing environmental accidents. In the context of Japan, Kuo and Chen (2013) discovered that Japanese companies tend to focus more on CED information related to environmental management, development of alternative energies and ecological factors to demonstrate the actions needed for companies to help mitigate global warming. They based their 45 CED items covering eight dimensions, with modifications capturing Japanese context, on the work of both Wiseman (1982) and Al-Tuwaijri et al. (2004) in the US alongside Aerts and Cormier (2009) in the US and Canada.

Meanwhile, many studies draw construction of their items of CED index from the GRI guidelines, especially GRI2 published in 2002 (e.g. Alberici and Querci, 2016; Fernandez-Feijoo et al., 2014; Gamerschlag et al., 2011; Hahn and Lulfs, 2014; Ho and Taylor, 2007; Morhardt et al., 2002; Plumlee et al., 2015). Yongvanich and Guthrie (2005) included ten environmental performance items in their CED index, and found that Australian mining companies consistently disclose energy, emissions, effluents and waste, and compliance items. In a different study, Clarkson et al. (2008) constructed a CED index by dividing the index into hard and soft types of disclosure. The hard disclosure includes four dimensions¹⁶ containing 29 items, and the soft disclosure includes three dimensions¹⁷ containing 16 items. The maximum score for hard disclosure was 79 and soft disclosure was 16, making a

¹⁶ Hard disclosure comprises four dimensions of governance structure and management systems, environmental performance indicators, environmental spending, and credibility.

¹⁷ Soft disclosure comprises three items of vision and strategy, environmental profile, and environmental initiatives.

total score of 95. Using a sample of 191 US companies on the 2003 CED, they found that good environmental performers have more of the hard type of disclosure than bad environmental performers, indicating that the good companies have actual and objective evidence of environmental activities. On the other hand, bad environmental performers focus more on soft disclosures that are ambiguous and subjective.

In a comparative study of five CED indices, Morhardt et al. (2002) assessed the comprehensiveness of Davis-Walling & Batterman, Deloitte Touche Tohmatsu, UNEP-SustainAbility, GRI 2000 and ISO14031 by measuring the scores of CEDQty in environmental reports of 40 largest international industrial companies. They found that some similarities and differences exist in the dimension and number of items for environmental information in these indices, and concluded that the companies that scored higher for the former three, scored below the prescribed standards when they were assessed based on GRI 2000 and ISO14031. One possible reason for the similarities and differences in the CED indices could be because they were designed by different constituents to meet particular requirements of CED. Because of this, when companies did not provide more detailed and comprehensive CED that required by both the GRI and ISO14031 (the international CED benchmark), they scored low in these two indices.

From the above-mentioned discussion, it can be established that the inclusion of environmental items in the CED index can vary, depending how it is determined. Further, even though some CED index would have originated from the same sources, almost all these studies owe their results to different sets of CED assessment, since they aligned their CED items according to country-specific context. This indicates the importance of a country-context in understanding how it affects the CED practices in a particular country (will be discussed in Section 3.5). Thus, this gives weight to consider not only the CED literature and international CED benchmark, but also by intergrating a country-context in developing a CED index for the purpose of this thesis.

In measuring the extensiveness of environmental information coverage in the CED index, researchers assess CEDQty by assigning a binary scale (1=presence; 0=absence) to a set of CED items identified in corporate reports and sum up the overall items disclosed. In this manner, researchers have been able to give an equal weight to each item (Freedman and Jaggi, 2005). Along this line, many studies in both developed and developing countries including US, Japan, Europe, Bangladesh, Portugal and India have employed overall items disclosed as a proxy for CEDQty (see Ho and Taylor, 2007; Khan et al., 2013; Michelon and Parbonetti, 2012; Monteiro and Aibar-Guzmán, 2010; Muttakin and Subramaniam, 2015).

Apart from having only overall environmental items disclosed, some researchers have categorised CED items into different dimensions, to form appropriate sub-total items before arriving at the overall items disclosed (Chiu and Wang, 2015; Cong and Freedman, 2011; Kuo and Chen, 2013). These authors argue that knowing the dimensions of environmental information allows a better understanding of why companies prefer to disclose certain types of environmental information rather than others, which is a matter that has been previously discussed by Clarkson et al. (2008).

Researchers using the CED index have claimed that the indexing procedures allows them to capture the measurement of CEDQty in a complete manner by detailing each item and then sum it up in a single comparable figure, whereas the volume-based CEDQty only assesses the lump-sum count without considering detailed items constituting the count (Cho and Patten, 2007; Cho and Roberts, 2010; Clarkson et al., 2008; Cormier et al., 2005; Gamble et al., 1996; Ho and Taylor, 2007). Moreover, the CED index can provide researchers with a significant understanding of what constitutes CED and the coverage dimension of CED being disclosed by assessing the presence or absence of CED items to enable the interpretation of possible justifications for the differing trends in companies. This is possible because the CED index permits computation of CED scores through a systematic reading and coding of company reports which constitutes a content analysis (Cormier and Magnan, 2007).

3.3.3 CED Quality (CEDQ)

The use of a CED index can help in the measurement of CEDQ, because the presence of CED items can be extended to include a particular numeric measure according to scoring scale that implicitly inform quality of CED (Cormier and Magnan, 2007). Determination of CEDQ, however, is a difficult task because quality is a holistic term that gives different meanings in accordance with different views. For example, The Association of Investment Management and Research (AIMR) describes disclosure quality as an aggregate score of disclosure (Byard and Shaw, 2003), and this is consistent with Cormier et al. (2005) and Brammer and Pavelin (2006a). However, the focus of CEDQ by Cormier et al. (2005) is on providing credible information, while Brammer and Pavelin (2006a) described CEDQ as the provision of report on company specific actions, quantification of company environmental impact, establishment of formal environmental targets, and being subject to external audits. Since there is no formal definition of CEDQ (Beattie et al., 2004), assessments of CEDQ tend to widely differ among scholars and are much subject to debate. Nevertheless, despite this limitation, CEDQ measurements have contributed to a meaningful understanding of the overall environmental information being disclosed in the CED research.

In measuring CEDQ, most researchers employ the ordinal scale (Table 3-2). The lowest scale begins with non-disclosure and an increasing ordinal scale indicates quantitative measures which include monetary and non-monetary terms. By using the ordinal scale, almost all studies give highest weight to quantitative and/or monetary disclosures than quantitative description and non-disclosure (Aerts et al., 2006; Cormier et al., 2005; Cormier and Gordon, 2001; Hughes et al., 2001). For example, the seminal work of Wiseman (1982) rated CEDQ according to the ordinal scale, which ranges from 0 to 3: with 0 represents non-disclosure, 1 represents a general qualitative disclosure, 2 represents detailed qualitative disclosure, and 3 represents a quantitative disclosure. She then computed CEDQ as the overall score

of 18 CED items¹⁸. Using a longitudinal analysis, she found that the CEDQ of her sample ESI companies from steel, oil, and pulp and paper industries was low. She argued that the low reporting was due to the belief that the cost of reporting CED exceeds possible benefits, while in fact some of the environmental information is easily available within companies without or with little cost.

While the ordinal scale introduced by Wiseman (1982) has been widely adopted in the subsequent CED studies, the complexity of the scale is subject to the researchers judgement. For instance, Gamble et al. (1995, 1996) employed a scale, ranging from 1 to 10 in assessing CEDQ of 276 companies from 27 countries. However, since their ordinal scale was too complex to follow, no further studies have adopted their approach. Nonetheless, their results revealed that companies in the petroleum refining, hazardous waste management, and steel works and blast furnace industries had the highest CEDQ.

Some recent works have extended the ordinal scale of Wiseman (1982) by giving the highest weight to item that has benchmark against best practices (van Staden and Hooks, 2007) and comparative disclosures (Beck et al., 2010). In the most influential study of CED, apart from Wiseman (1982) and Cormier et al. (2005), Clarkson et al. (2008) set the scoring scale (in hierarchy order) for environmental performance indicators to include: performance data in comparison to industry or competitors; in comparison to prior periods; in comparison to targets; in absolute and normalised form; and segmental data – as a means to better capture the quality of environmental performance.

Despite the differences in the interpretation of ordinal scale, most researchers with the exception of Al-Tuwaijri et al. (2004), calculate CEDQ by summing up the scores of all items in the CED index to arrive at the overall score of CEDQ (Aerts et al., 2008; Aerts and Cormier, 2009; Beck et al., 2010; Brammer and Pavelin, 2006a; Clarkson et al., 2008, 2013; Cormier et al., 2005, 2011; Cormier and Magnan, 2007, 2015; Moroney et al., 2012; Plumlee et al., 2015; Rupley et al.,

¹⁸ With maximum score of 54 (derived from 18 items x maximum scale of 3)

2012; van Staden and Hooks, 2007). To some extent, they divide this score into the maximum possible points to determine the percentage of overall score that represents continuous variable, which ranges between 0% and 100%. The difference between the summing of scores only and the percentage of scores is in the interpretation of the results.

Although the ordinal scale is widely applied in the CED research, and argued as beneficial in assessing the practice of environmental responsibility in a systematic manner (Skouloudis et al., 2010), the use of different scoring scale (binary and ordinal) is not susceptible to criticism. Referring to CEDQty, even though the CED index caters for the complete measure of CED, the binary scoring scale limits the extensive measure of CED. Accordingly, CEDQty awards similar weight to two companies that provide all items in the CED index, although one of the companies may provide strong reporting of CED. This is bias to both companies, hence a turning point to CEDQ. One particular debate concerning CEDQ scoring scale is the distance between the ordinal scale. While in a continuous scale, the distance between each value is concrete, a similar distance is not applicable to ordinal scale. Thus, the use of ordinal scale is associated with the subjective judgement of researchers. For example, Wiseman (1982) grouped monetary and quantitative disclosure together, while keeping a distance between brief qualitative and specific qualitative disclosures. The question arises here is why there is no distance between monetary and non-monetary disclosures as if a distance in brief and specific qualitative disclosures.

While attempting to address the above question with caution, Beattie et al.'s (2004) comments on quality is worth noting. That is quality is a multi-faceted term, and in most cases are not easily measured. Hence, it is unlikely that quality can be measured directly by using continuous scale. Consequently, the best scoring scale is using the ordinal scale.

Acknowledging the foregoing debate on whether CEDQty or CEDQ is most suitable in CED research, Table 3-3 summarises the pros and cons of CEDQty and CEDQ.

Table 3-3: Pros and Cons of CEDQty and CEDQ

	Volume-based CEDQty	Extent-based CEDQty (CEDQty)	Extent-based CEDQ (CEDQ)
Pros	Count – enable quick assessment on the existence of any environmental disclosure.	<p>CED index – enable measure of completeness of desirable CED items.</p> <p>Scoring using binary scale - enable one to give similar weight to all CED items. This same weight allows meaningful interpretation of items mostly disclosed by companies and possible explanation for disclosure behaviour.</p>	<p>CED index - enable measure of completeness of desirable CED items.</p> <p>Scoring using ordinal scale -enable one to give different weight to CED items. This different weight allows meaningful interpretation regarding items with highest and lowest quality of disclosure and possible explanation for such behaviour.</p>
Cons	Does not contribute to meaningful interpretation in terms of coverage and quality of CED.	<p>CED index – subject to researcher judgement, international and domestic context for the inclusion of items.</p> <p>Scoring using binary scale - limits the measure of extensiveness and bias towards strong reporting company.</p>	<p>CED index – subject to researcher judgement, international and domestic context for the inclusion of items.</p> <p>Scoring using ordinal scale – the distance between each value in the ordinal scale is questionable.</p>

As revealed in Table 3-3, both CEDQty and CEDQ pros and cons are almost equal. Even with a combination of both measures, empirical studies were very limited, especially in the context of Malaysia (Appendix 1). This thesis addresses this gap by using the extent-based CEDQty and CEDQ. While CEDQty will be calculated by summing up the overall score and sub-total score by dimension of CED items based on binary scale, CEDQ will be measured by summing up the same scores on ordinal scale (Section 5.4.1 and 5.5.1).

3.4 Corporate Environmental Disclosure (CED) in Malaysia

In contrast to developed countries, research on CED (as part of CSD) in Malaysia is not yet extensive despite worsening environmental pollutions (DOE Malaysia, 2015). The review of Malaysian literature indicates that the studies of the volume or extent of CED in Malaysia can be classified into two stages based on the years of data analysis (Appendix 1). The first stage involves the data analysis prior to 2006, and the second stage focuses from 2006 to 2011. This distinction shows that during the early periods, the Malaysian researchers had focused more on CSD than CED. Over time, research on CED has gained attention. This signifies the evolving process of CED within Malaysia institutional environment which lends some support for using institutional theory as the prime theoretical framework for this thesis.

The first stage of data analysis (1983 – 2005) saw many studies concentrated on CSD than CED (e.g. Amran and Devi, 2008; Andrew et al., 1989; Haniffa and Cooke, 2002; Thompson and Zakaria, 2004). Studies published prior to 2012 reported consistent findings of the low overall level of CSD and CED by Malaysian companies. They also reported disclosure is limited to merely descriptive information. By using word count to measure CEDQty practices, Ahmad, Hassan et al. (2003) discovered that only 39 of their sample companies (of 299) provided CEDQty in their 1999 ARs. Of the disclosure companies, 23 companies were categorised as ESI with majority of the information provided by the disclosure companies being a general statement. Ahmad, Hassan et al. (2003) also found that the level of CEDQty was influenced by the type of auditor and leverage. The findings reported by Ahmad, Hassan et al. (2003) corroborate with the findings in later studies by Thompson and Zakaria (2004), and Othman and Thani (2010). Those results reflect the infancy state of CED in Malaysia.

Thompson and Zakaria (2004) suggested that in the Malaysian context, low level of CED is due to various factors. They include the lack of pressures from government and stakeholders, the lack of perceived benefits of CED among

business community and consumers, companies' perception about the impact of their business to the environment, and the general reluctance of companies in making disclosure beyond the requirement. It could be argued that all the reasons are related to the lack of awareness on the importance of both CSR and CSD among top management, employees, accounting professionals and societies. In turn, this has resulted in a lack of responsiveness in CSD among companies (Teoh and Thong, 1984). For example, Ramasamy and Ting (2004) found that when the top management of Malaysian companies did not provide full support for CSR, employees were likely to undervalue the CSR effort. Because of this, the Malaysian managers and executives lack of responsiveness when it comes to CSD although they were aware about the benefits of CSD (Rashid and Ibrahim, 2002).

Studies by Zulkifli and Amran (2006), and Zain et al. (2006) agreed that the lack of awareness among accounting professionals on CED was related to the lack of emphasis in considering environmental concern as an important ethical issue in the accounting curricula at universities. This has resulted in the accounting professionals to have limited knowledge and skills in CED. Hence, Zain et al. (2006) suggested that the Malaysian professional accounting bodies develop guidelines and standards for CSD, and work with the Malaysian universities to embed these guidelines in the revision of accounting curricula of these universities. This is consistent with suggestion by AICPA (1999) and PwC (2004) that foresee accounting professionals to play a prominent role in encouraging and verifying CED practices by companies. The AICPA is the American Institute of Certified Public Accountant that represents the professional accounting body, while PwC is the PricewaterhouseCoopers that represents one of the big accounting firm worldwide. The suggestion of Zain et al. (2006) on the interaction between accounting education and accounting profession for understanding environmental accounting consistent with Fleischman and Schuele (2006) and Lodhia (2011). It is expected that when accounting professionals are exposed to CED since their tertiary education, they can become the catalyst in promoting CED when they are on the job.

On the lack of government and stakeholders pressure for CED, Thompson and Zakaria (2004) acknowledged that this is a domestic context. Malaysia has initiated CED in early 2000s but at that time the focus was towards CSD (ACCA, 2002). Such initiative is mainly derived from institutional pressures of the Malaysian Government (symbolised through *Vision 2020*) and professional accounting bodies (symbolised through the sustainability reporting awards). These institutionalisations of CSD are evidenced in the study by ACCA (2002) and Amran and Devi (2008) when they concluded that the reporting of CSD are influenced by the government's aspiration of becoming a fully developed country with emphasis on environmental sustainability (in *Vision 2020* – detailed in Section 4.3.2) and the influence of ACCA (represents professional accounting bodies) by promoting CSD through corporate sustainability reporting awards (detailed in Section 4.3.2.3). In responding to these pressures, the Malaysian companies confined their reporting to philanthropic activities rather than environmental activities because they were uncertain about the benefits of CED (ACCA, 2002). Moreover, the reporting of CSD was voluntary. This condition suggests that despite the existence of institutional pressures for CED in Malaysia, the pressures on Malaysian companies to report CED are limited.

The second stage of data analysis (2006 – 2011) witnesses the increasing attention of CSD and CED research in Malaysia subsequent to the institutional pressures exerted by the Malaysian Government in requiring mandatory CSD which took effect from 2007 (Haji and Ghazali, 2013a; Zainal et al., 2013). Specifically, through the Paragraph 29, Part A, Appendix 9C of *BM MM Listing Requirements*¹⁹, the Malaysian Government requires all Malaysian publicly-listed companies to provide CSD in their ARs. The *BM CSR Framework*²⁰ was issued to clarify about the four areas of CSD: the marketplace, the workplace, the community, and the environment (detailed in Section 4.3.2.4) (Bursa Malaysia, 2006c).

¹⁹ Bursa Malaysia Main Market Listing Requirements

²⁰ Bursa Malaysia Corporate Social Responsibility Framework

Although this move (from voluntary to mandatory reporting of CSD) signifies the evolving institutional environments of CED in Malaysia, the empirical studies found that the low level of CEDQty practices is still persisting (Ahmad and Mohamad, 2014; Ahmad and Sulaiman, 2004; Eljido-Ten, 2009b; Mokhtar and Sulaiman, 2012; Said et al., 2013; Yusoff et al., 2007). This is despite the increasing pattern of CED. Similarly, studies on CEDQ also discovered that although the CEDQ practices are slowly progressing, they were still at low level because the information provided was merely self-serving and descriptive in nature with less emphasise on quantitative monetary or non-monetary information (Ahmad and Haraf, 2013; Ahmad and Mohamad, 2014; Buniamin et al., 2011; Hamid et al., 2015). The low level of CEDQty and CEDQ were found consistently through a single year (e.g. Ahmad and Mohamad, 2014) and multiple years (e.g. Hamid et al., 2015) analysis, including the measurement of CED being either the volume-based (e.g., word counts, page counts) or extent-based (e.g., content of CED with respects to the presence or value of information). For example, Ahmad and Haraf (2013) used both CEDQty and CEDQ to find that the highest CEDQty by property development companies between 2004 to 2006 was 63 sentences with the lowest having no disclosure. The highest CEDQ score was 19 out of 95 (most possible score). This low level of CEDQty and CEDQ seems to suggest that although there is a mandatory requirement for CSD, Malaysia institutional pressures for CSD is hampered by the vagueness in the guidelines of CED. In particular, it is silent about whether companies should furnish CED in yearly reporting and what format and content of CED should be. Moreover, it does not specify the consequence for not reporting CED, which leaving companies to use their own discretion to decide what and how to report CED.

While the research based in Malaysia has measured CED on volume-based and extent-based, there are limited studies that combined the extent-based CEDQty and CEDQ in a single study (e.g. Ahmad and Haraf, 2013; Ahmad and Mohamad, 2014; Eljido-Ten, 2009a). Exceptions are the studies by Mokhtar and Sulaiman (2012), Buniamin (2010) and Buniamin et al. (2011) which are based on a combination of extent-based CEDQty and CEDQ. Their studies, however, only employed a cross-

sectional analysis (with the latest data of their analysis reporting year 2006). Meanwhile, the latest year of data analysis for either the extent-based CEDQty or CEDQ of the other Malaysian studies was based on the company reports of 2009 (Ahmad and Mohamad, 2014; Hamid et al., 2015; Said et al., 2013; Sulaiman et al., 2014), with exception to Iatridis (2013) who examined CEDQ until 2011. This has therefore highlights the gap in the Malaysian CED practices, which consistent with the call by Patten (2015) for more research combining both approaches. This also emphasises the lack of studies using longitudinal analysis and recent data in both CEDQty and CEDQ in Malaysia. This thesis will attend to the limitations in the current literature by undertaking a longitudinal analysis between 2006 and 2014 to measure the extent-based CEDQty and CEDQ.

Pertaining to the extent-based measurement, the review of CED notes that all studies in Malaysia have used a binary scale to assess CEDQty. However, for CEDQ, while some studies have employed an ordinal scale, the remaining studies also used a binary scale in measuring CEDQ. For example, Sulaiman et al. (2014) assigned an ordinal scale ranging from 0 to 4 to assess CEDQ. Smith et al. (2007) were in the opinion that the ordinal scale ranging from 0 to 3 is sufficient to measure CEDQ. By contrast, Mokhtar and Sulaiman (2012), and Buniamin (2010) only utilised the binary scale in measuring CEDQ. This indicates that the choice of scale for assessing CEDQ is subject to the researcher's judgement (see Section 3.3.3).

In regard to the instrument for measuring CED, the review indicates that the Malaysian studies did not use the third party data to obtain CED, as in Western research (see Section 3.3.2). Instead, they have constructed a CED index and derived the inclusion of items in this index from various sources including the CED literature, the Malaysian pronouncements, and international benchmarks (Appendix 1). Since Malaysia has committed to the Kyoto Protocol in 2002 (Malaysian Government, 2010a), the inclusion of international benchmarks into the CED index would appear to demonstrate the influence of international institutional pressures for CED in Malaysia. These pressures flow to the Malaysian institutional environment, one of which through the role of government. Given that the

Malaysian Government has promoted the preservation of environment for sustainable living in *Vision 2020* (Malaysian Government, 2001), one would expect more references are made to the Malaysian Government pronouncements in addition to the international benchmark. The combination of both is important because it would represent the top-down influences of institutional pressures of CED on Malaysian companies and the bottom-up responses by companies on institutional pressures on CED. However, there is a lack of CED research that combines both in a comprehensive manner when designing the CED index (e.g. Buniamin et al., 2011; Mokhtar and Sulaiman, 2012; Sulaiman et al., 2014). This validates the need for integrating the Malaysian pronouncements (including policies, legislations, and guidelines) with the international benchmark to reinforce the research design of this thesis.

In addition to items in the CED index, the influence of institutional pressures for CED could be viewed from the reporting medium. Studies of CSD at the international level have demonstrated that the international institutional pressures from GRI and IIRC had caused many companies to report their CSD in SR or integrated reports (IR), rather than in AR (Ernst & Young and Boston College Centre, 2014; KPMG, 2015). However, the Malaysian CSD literature indicates that despite the promotion by ACCA Malaysia (2010, 2014) in using SR for CSD, the Malaysian companies tend to use AR. Hence, the Malaysian studies largely used AR as a source for examining CSD practices, with exception of Iatridis (2013) and Said et al. (2009) who combined the AR and website disclosures. This marks the gap in the reporting medium of CED which necessitate examination in this thesis. This thesis contributes in filling such gap by choosing the reporting of CED via both AR and SR.

While institutional pressures for CED appear to be important in encouraging CED, the Malaysian studies have largely adopted legitimacy theory and agency theory (e.g. Ahmad and Haraf, 2013; Haniffa and Cooke, 2005; Iatridis, 2013; Said et al., 2013) (see Appendix 1). Only few studies have employed institutional theory in examining CSD (and CED) practices (Amran and Devi, 2008; Amran and Haniffa,

2011; Hamid et al., 2015; Othman et al., 2011). Given that CED in Malaysia is low, the heavy reliance on legitimacy and agency theories may not reflect the Malaysian context because of the limitations with those two theories as discussed in Chapter 2.

According to institutional theory, the institutional environment that consists of many levels will exert pressures for CED on companies. Accordingly, companies will interpret these pressures from their own perception and in turn this will affect their CED practices. The change in CED practices could take many years and this is consistent with the argument in institutional theory that institutions change over time and space (Scott, 2014). Employing this theory, Amran and Devi (2008) discovered that the CSDQty in Malaysia was influenced by the institutionalisation of the Malaysian Government's initiatives towards CSR. This finding was further reinforced by Amran and Haniffa (2011) when they segregated the sources of institutional pressures for CSD, to find that all three sources of pressures affected the CSDQty practices. By focusing on the mandatory CSD requirement, Othman et al. (2011) supported that this coercive pressure is significant in affecting CSDQty in Malaysia. In a more recent study, Hamid et al. (2015) confirmed that this coercive pressure is also significant in affecting CEDQ practices. However, the work of Amran and Devi (2008), and Amran and Haniffa (2011) focused on a cross-sectional analysis of CSD, while Othman et al. (2011) and Hamid et al. (2015) made a comparative CSD (or CED) between two years only.

Since institutional theory posits that institutions are evolving over time and space, the low but slowly progressing state of CEDQty and CEDQ in Malaysia justifies the use of institutional theory in this study. The following Section 3.5 will review factors affecting the CED practices at a broader perspective and relate the review to the Malaysian CED context.

3.5 Factors Affecting Corporate Environmental Disclosure (CED)

Prior literature suggests that many factors could affect CED (and CSD) practices by companies. Consistent with Adams (2002), this section reviews the factors affecting CED based on three categories: country-specific contextual factors, company characteristics, and internal organisation context.

3.5.1 Country-specific context

A country-specific context could include the elements of social, political, and economic systems that can differentiate one country from another (Adams and Kuasirikun, 2000; Cormier and Magnan, 2007; Swoboda et al., 2015). Based on a cross-country study, Williams (1999) sampled 356 listed companies from seven Asia-Pacific nations, to find that variations in the CSD practices among countries are influenced by the specific country's national culture and political and civil systems. Later studies also found that the cultural, social, political, business, and legal systems of a country explain the variations in the CSD practices among companies (Chapple and Moon, 2007; Fernandez-Feijoo et al., 2014; Ho and Taylor, 2007; Ioannou and Serafeim, 2012; van der Laan et al., 2005, 2010; Ortas et al., 2015). For example, by using a sample of companies from 42 countries, Ioannou and Serafeim (2012) documented that the political system, followed by labour and education system, and the cultural system are the important institutions that influence the CSD practices. To complement this finding, Ortas et al. (2015) revealed that companies operating in different countries show dissimilar CED although they shared common commitment of CSR initiatives under the UNGC. This evidence shows that a country context is influential in determining CED. This is so because each country has different characteristics and therefore it requires different approach in shaping the institutional environment for CED which later govern the CED practices of that country.

Even within the same country, some longitudinal studies (Albertini, 2014; Campbell, 2004; Deegan and Gordon, 1996) found that CED practices are changing over time, resulted from the changing institutional environment of social, political and economic systems of respective countries. For example, Albertini (2014) discovered that French listed companies were increasing their CSD in annual reports after the New Economic Regulations law was introduced in France in 2001. In Malaysia, studies have shown that CSD were increasing after the mandatory disclosure of CSD in 2007 through the *2006 BM Listing Requirements*. However, the existing Malaysian studies on the changing institutional environment for CSD are limited and those that examine the changes limit the data analysis up to 2011 with the focus is merely on the shift from voluntary to mandatory disclosure of CSD. Exception is to the studies by Haji (2013b, 2013a) who also examined the influence of Global Financial Crisis on CSD (see Section 3.4).

An important aspect of the country context highlighted above is the political system which relates to the government. In a democratic country, government refers to the official institution for governing that gain its sovereign power from voters during election (Shiroyama et al., 2012). When in position, the government has the capacity to shape a country's economic and social systems such as designing policies of the economy that can be linked to various sustainable agenda in fulfilling its accountability to the society (Williams et al., 2011). Among others are the policies related to environmental protection and corporate governance that can secure the well-being of a country (Albareda et al., 2007; Matten and Moon, 2008). Regarding the environment, Oliver's (1991) idea of strategic responses to institutional pressures suggest that government can impose regulation to increase the level of awareness on shared responsibility on environmental protection. In this view, some CED researchers promote government regulation through mandatory disclosure as a mean to increase CED among companies, although they acknowledged that some companies resist to compliance (Criado-Jiménez et al., 2008; Frost, 2007; Vormedal and Ruud, 2009).

Proponents of mandatory disclosure requirement²¹ argue that this form of government regulation exert pressures on companies to report on environmental information (Andrikopoulos and Kriklani, 2013; Jeffrey and Perkins, 2013; Williams and Adams, 2013). Therefore, companies would increase their awareness about public expectation concerning environmental responsibility because the requirement demands companies to monitor their compliance level (Unerman and O'Dwyer, 2007; Williams and Adams, 2013). Due to coercive influence of government regulation on corporate behaviour, some countries such as Spain (Moneva and Cuellar, 2009), Denmark (Andrikopoulos and Kriklani, 2013; Cowan and Gadenne, 2005), Norway (Vormedal and Ruud, 2009), Australia (Frost, 2007) and the UK (Barbu et al., 2014) have used regulations as a basis for requiring CED among companies.

Although mandatory disclosure requirement is in place, Gabbioneta et al. (2007) asserted that there is still variation in the contents and details of CED because some mandatory disclosure requirements are very general, while others require specific environmental information. Moreover, there is evidence that mandatory disclosure requirement has failed to encourage CED (Freedman and Stagliano, 2002). Therefore, the mandatory disclosure requirement to some extent appears not to fit its purpose although some scholars support the use of mandatory disclosure requirement to increase CED (Criado-Jiménez et al., 2008; Freedman and Jaggi, 2005; Othman and Ameer, 2010).

In addition to the political and economic contextual factors, the cultural system which includes the elements of national culture, ethnicity and religion also explains the variations in the CSD among companies (Haniffa and Cooke, 2002, 2005; Hooghiemstra et al., 2015; Ramasamy et al., 2010). This is due to the cultural system of a country is closely linked to managerial decision-making process. For instance, Gray (1988) proposes that power distance, uncertainty avoidance,

²¹ The minimum level of information that firms must disclose due to statutory regulations based on the Companies Act, accounting standards or stock exchange listing requirements (Ghazali, 2008; Haniffa and Cooke, 2002; Ousama and Hamid, 2010)

individualism, and masculinity are dimensions of national culture that differentiate the trends of corporate disclosure between countries. Ho and Taylor (2007) tested this national culture influence in the US and Japan settings, to find that Japanese companies provided more triple bottom-line reporting than the US companies because they are associated with much higher uncertainty avoidance and much lower individualism. Khelif et al. (2015) discovered in a meta-analysis study that the national culture of masculinity, individualism and long-term orientation moderate the association between profitability and CSD. Meanwhile, Haniffa and Cooke (2005) used ethnicity of Malays as a proxy of culture in Malaysia and concluded that companies with more Malays directors disclose more CSD. Baydoun and Willet (2000) suggest religion as a cultural variable and Ramasamy et al. (2010) found that religion is positively correlated with CSR among consumers. However, the study of Ramasamy et al. (2010) is based in Hong Kong and Singapore where Buddhist dominated the sample of their study. There has been limited study in understanding the influence of religion, particularly Islam on CED in the Malaysian context. Therefore, this thesis takes the position to study the influence of Islam by examining the Islamic influence variables at company and internal organisation contexts.

To provide basis for understanding Islamic influence at a country level, it is noteworthy to bring the nature of cultural setting in Malaysia. The Bumiputeras (Malays and other indigenous groups) are the native ethnicities of Malaysia. According to Kennedy (2002), the history of Malaysia records that Malays have embraced Islam (based on the *Shafi'i* version of *Sunni* theology and jurisprudence) since the fourteenth century after it was introduced by traders from Middle East. During this period, Malaysia²² was one of the most important trading ports in the South East Asia, especially for spices among traders from the West and East. Under Islamic leadership, the port became the center for the spread of Islamic teaching in this region. Accordingly, after Independence Day on 31 August 1957, Islam was

²² Formerly known as Federation of Malaya that comprises Peninsular Malaysia and Singapore. In 1963, Malaysia was formed consist of Peninsular Malaysia, Sabah, Sarawak and Singapore. However, in 1965 Singapore left Malaysia (Brown, 2007; Choo-Beng, 2000).

recognised as the official religion of Malaysia under Article 3, *Constitution of Malaysia* (Malaysian Government, 2009a). The *Constitution of Malaysia* permits the practice of other religions provided that these are practised in peace and harmony. The same article of the *Constitution of Malaysia* also provides power to Malay Rulers in each State in Malaysia as the Head of Islam in the State, while the Head of Islam for Malaysia as a country is the Yang Dipertuan Agong (Head of Malay Rulers). This implies that Islam has been embedded in the Malay ethnic group, and this thesis suggests that the influence can be viewed from country to individual level. The following section discusses the factors affecting CED at company level.

3.5.2 Company characteristics

Many studies have examined the association between company characteristics (e.g., company size, industry, financial performance, *Shari'ah*-compliant status, company age, listing status, media exposure, industry, financial performance and environmental performance) and CSD (Chiu and Wang, 2015; Clarkson et al., 2008; Giannarakis et al., 2018; Haji and Ghazali, 2013b; Muttakin and Subramaniam, 2015; Santos et al., 2019; Sundarasan et al., 2016). It has emerged from the review of literature that company size and industry membership have been frequently used as control variables in explaining variations of CSD at individual company level both in developed and developing countries (see, Dienes et al., 2016; Hahn and Kuhnen, 2013). Majority of the studies (Andrikopoulos and Krikiani, 2013; Brammer and Pavelin, 2006a; Haniffa and Cooke, 2005; Liu and Anbumozhi, 2009; Sun et al., 2010) have concluded that larger companies are likely to have high CSD (and CED) owing the explanation to the visibility of companies in their economic contribution and interaction with multiple stakeholders (Branco and Rodrigues, 2008; Rupley et al., 2012).

Studies also concluded that variations in the CSD practices across industries exist due the unique characteristics of potential growth, competition levels, inherent

environmental impact, the visibility of social and environmental risks, and the degree and type of regulatory intervention in each industry (Brammer and Pavelin, 2006a; Cho et al., 2014; Kolk and Perego, 2010). Some studies have revealed companies residing in environmentally-sensitive-industries (ESI) provide more CED than non-ESI. Definition of ESI, however, is subject to the interpretation at the country context (Brammer and Pavelin, 2008; Liu and Anbumozhi, 2009; Rupley et al., 2012; van Staden and Hooks, 2007). Studies of CSD in Malaysia have made reference to BM industry classification in differentiating the industry practices (e.g. Haji, 2013a; Haji and Ghazali, 2013a) and notably this classification is different from the worldwide classification. Due to the difference in industry classification, therefore the grouping of ESI in Malaysian studies appears to be different from studies in other countries. Based on this limitation, this thesis uses GICS classification in selecting the sample of this study that focus on ESI companies in the utilities, energy and materials industries. Prior studies have found that companies in those industries provide more CED than in other industries due to the direct impact of their business activities (because the companies engage in modification processes) on the environment (Brammer and Pavelin, 2008; Rao et al., 2012; Yongvanich and Guthrie, 2005). Accordingly, this inherent environmental impact is associated with the visibility of social and environmental risks, and attracted public exposure. Therefore, it is important to examine how the Malaysian companies residing in those industries practice CED. This enables a comparison of the result to be made with the existing literature in other countries.

Prior studies pertaining to the influence of financial performance such as profitability and leverage on CSD are inconclusive. Although it is commonly argued that higher profitability may increase CED, scholars have tended to assume that this relationship is based on a range of theoretical reasons. The study by Roberts (1992) provided support to stakeholder theory, which states that environmentally-responsible activities demand attention from a company's top management and in turn, require costs. Accordingly, companies enjoying higher profitability have the ability to support the costs of CED after prioritising activities related to economic viability (Roberts, 1992; Ullmann, 1985). Using a multiple regression method for a

panel data in a Bangladesh context, Khan et al. (2013) include return on asset as a variable in their study and observe a significant positive relationship between both variables. They concur that CED is a medium of legitimisation. To accommodate that, companies require funds, which are derived from company resources – profitability. This positive relationship illustrates a positive-sum game and implies that companies are utilising their profit to promote CED (Neu et al., 1998).

According to agency theory, profitable companies are expected to provide more CED to demonstrate the ability of the management in maximising the value of shareholder and increasing management compensation arrangements. As a result, there are studies that show a direct relationship between CED and profitability (Giannarakis, 2014b; Iatridis, 2013). In line with political cost hypothesis, a high level of profitability signifies a company visibility. Gamerschlag et al. (2011) suggested that to demonstrate a socially-responsible business philosophy, profitable companies might increase their CED to avoid any political consequence for not reporting. Employing a combination of agency, signalling and political cost theories, the findings of Frias-Aceituno et al. (2014), involving a panel data from 20 countries between 2008 to 2010, reach the same result of a significant positive relationship between profitability and CSD. This result is similar to that of the studies of Muttakin and Subramaniam (2015), which integrate agency and institutional theories.

Conversely, others have found that profitability has no effect on CSD, although these studies also employed the same theoretical arguments. For example, prior studies draw on stakeholder theory (Michelon and Parbonetti, 2012), legitimacy theory (Aerts and Cormier, 2009), and agency theory (Alsaed, 2006) failed to report a significant association between the two variables. Additionally there is also evidence (albeit limited) on a significant negative association between profitability and CSD (Andrikopoulos and Kriklani, 2013; Ho and Taylor, 2007; Huang and Kung, 2010). The studies in Malaysia also revealed a contrasting result of both positive (Haniffa and Cooke, 2002; Sundarasan et al., 2016) and insignificant

association between profitability and CSD (Haji and Ghazali, 2013a; Rahman et al., 2011; Sulaiman et al., 2014).

For leverage, there are two perspectives that offer explanation for the contrasting results. On the one hand, it is theorised that companies with a high leverage will have a lower CSD because these companies would be limited by resources to invest in discretionary activities (Brammer and Pavelin, 2006a). Additionally, Attig and Cleary (2014) argue that this can also reduce agency costs by limiting managerial discretion on voluntary CSR activities. Therefore, companies tend to forego CSR and concentrate in prioritising their compulsory obligations to debtholders. Accordingly, companies are likely to have less CSD. Brammer and Pavelin (2006a) were able to prove this relationship in their studies that highly-leveraged companies disclose less of both CEDQty and CEDQ. The same negative association is also reported by Branco and Rodrigues (2008) and Cormier et al. (2011). In Malaysia, Haji and Ghazali (2013a) and Sulaiman et al. (2014) also share a similar finding on the negative association between leverage and CSD (and CED) despite their contrasting argument on this relationship. They suggest that this result could be due to a close relationship between creditors and companies, in that companies may probably use other channels to communicate their CSD.

On the other hand, higher leverage companies may have a high CSD than lower leverage companies because this disclosure facilitates debtholders in assessing the ability of companies to meet their debt obligations (Garcia-Sanchez et al., 2011; Prado-Lorenzo, Rodríguez-Domínguez, et al., 2009). Roberts (1992) has attributed the reason as being due to the power of creditors to influence a company's access to financial resources. When companies perceive that creditors are emphasising environmental responsibility in honouring financial loans to companies, the propensity for companies to report on CED is higher because they are motivated to do so in order to secure the loans. While servicing the loans, companies are subjected to monitoring by creditors at regular intervals. Accordingly, Clarkson et al. (2008) contended that companies with higher debts tend to have higher agency costs, deriving from these monitoring activities. Thus, they are likely to increase

disclosure to satisfy the demand for information from stakeholders, especially the debtholders alongside existing and prospective investors. Despite this, there are other studies that do not support a relationship (Clarkson, Overell, et al., 2011; Prado-Lorenzo, Rodríguez-Domínguez, et al., 2009; Stanny and Ely, 2008). Based on the contrasting empirical findings, this thesis will revisit the impact of profitability and leverage on CED in Malaysia.

Prior studies have also examined *Shari'ah*-compliant companies, however most of the empirical evidence is restricted to financial institutions and there is limited study on the association between *Shari'ah*-compliant companies and CSD. For example, Maali et al. (2006) sampled 29 Islamic financial institutions worldwide and found that their sample banks provided some forms of CSD but none is related to CED. The same conclusion is arrived in the study by Aribi and Arun (2015) who sampled seven Islamic banks in Bahrain. Aribi and Gao (2010) compared the CSD of conventional and Islamic financial institutions in the Gulf region, to find the CSD provided by Islamic financial institutions is significantly higher than the conventional financial institutions. The differences are due to philanthropy, *Shari'ah* Supervisory Board report, and other CSD that is not related to CED. Sairally (2013) attributed the reason for none disclosure of CED by the financial institutions is due to they have no direct involvement with the environment.

Without restricting the sample to financial institutions, Zainal et al. (2013) and Nugraheni and Anuar (2014) compared the CSD practices between *Shari'ah*-compliant and non-*Shari'ah*-compliant companies. In the Malaysia setting, Zainal et al. (2013) discovered no difference in the CSD practices in 2005-2009 between *Shari'ah*-compliant and non-*Shari'ah*-compliant companies. However, the CED of *Shari'ah*-compliant is significantly higher than non-*Shari'ah*-compliant companies for the period 2005-2006, but this significant difference is diminished for 2007-2009. Zainal et al. (2013) did not suggest any justification for differences on CED across years. In the Indonesia setting, Nugraheni and Anuar (2014) revealed that *Shari'ah*-compliant provide a significantly higher CED than non-*Shari'ah*-compliant companies and they attributed the reason to the accountability based on

Shari'ah that the *Shari'ah*-compliant companies hold. Some studies (Haji, 2013a; Haji and Ghazali, 2013a; Ousama and Hamid, 2010) in Malaysia have only sampled *Shari'ah*-compliant companies. Despite that the *Shari'ah* emphasises accountability to the environment, they found their sample companies provided low quantity and quality of CSD (including CED). They attributed the reason for low disclosure as being lack of awareness of Islamic values in aspects of accountability and full disclosures.

It is clear from the literature that studies on the association between *Shari'ah*-compliant companies and CSD are lacking. *Shari'ah* is a system of norms, ethics and values that are central in facilitating all aspects of human life (e.g., economic, social, and political) in accord with Islamic practices (Dusuki, 2008; Maali et al., 2006). Given that Islam is embedded into the Malaysian society through the country contextual factor, this thesis considers examining the influence of Islamic influence on CED by using *Shari'ah*-compliant companies would contribute to knowledge in the study of CED.

With regard to the relationship between company age and CSD, Roberts (1992) and Muttakin and Subramaniam (2015) revealed that more mature companies provide more CSD. Older companies are motivated to do so because of their concern about the companies' reputation. Meanwhile, findings regarding the effect of listing status on CSD discovered that listed companies provide more CSD than non-listing companies (Fernandez-Feijoo et al., 2014) and that companies listed in international market such as the New York Stock Exchange disclose more CED than those listed in the national market (Santos et al., 2019). For the effect of media exposure and environmental performance, some studies have found companies that are subject to media attention and companies that have better environmental performance provide more CED than their counterparts (Branco et al., 2008; Chiu and Wang, 2015; Giannarakis et al., 2018; Iatridis, 2013).

3.5.3 Internal organisation context

There has been a considerable amount of literature that examine the influence of internal organisation context on CSD and generally the studies employ qualitative approach. Adams (2002) conceptualises the internal organisation context to include the attitudes of the key players and the processes by which companies report CSD. From the interview with seven companies in the chemical and pharmaceutical industries, she found how companies are responding to CSD are influenced by the attitudes of their key players and the internal process. She also found that the country contextual factors (e.g., institutional pressures), company-characteristics (company size, corporate culture) and internal organisation contextual factors interlink with each other influencing CSD. In a case study of a water company, Adams and McNicholas (2007) studied the corporate processes for reporting and discovered the managerial decision making for CSD are influenced by the nature of state ownership, CEO' individual perception, industry membership and the reporting by industry leaders. By pointing to the attitudes of decision makers, Adams and Frost (2008) revealed that the senior management's lack of understanding sustainability has impact on the CSD decision making. It has emerged from literature that CSD is a process of reporting that requires input from a number of individuals and functions within and across a company. Therefore, this provides a basis for application of multi-theoretical framework of institutional, Islamic accountability and resource-based theories in explaining how companies perceive and response to CED for the purpose of this thesis.

Prior studies focusing on the attitudes of decision makers and internal process tend to examine the attributes of Chairperson, CEO and board of directors that are related to education, tenure, gender, personal values, board size and board independence to influence CSD. For example, de Villiers et al. (2011) found that companies with larger boards, larger representation of active CEOs on board, and higher board independence will have higher environmental performance. Other studies also found a similar positive association of board size and board independence on CSD

and CED (Arena et al., 2015; Frias-Aceituno et al., 2013; Giannarakis, 2014a; Haji, 2013b; Iatridis, 2013; Liao et al., 2015). Contrast to this, some studies including those based in Malaysia have found board size and board independence either negatively influence CSD or have no association with CSD (Amran, Lee, et al., 2014; Cheng and Courtenay, 2006; Haniffa and Cooke, 2005; Hussain et al., 2018; Kassins and Vafeas, 2002; Prado-Lorenzo and Garcia-Sanchez, 2010). Since there are contrasting findings on the influence of board size and board independence on CSD and CED especially in the context of developing countries, therefore this requires further examination in this thesis.

Meanwhile, Amore et al. (2019) documented that CEO education shapes managerial decision making of sustainability actions regarding energy efficient and this finding is similar to Manner (2010) and Huang (2013). Findings of Harjoto et al. (2015) revealed that gender, tenure, and expertise diversities of the board of directors influence the CSR activities of a company. The influence of gender of CEO and board of directors is also examined in different studies (Amran, Periasamy, et al., 2014; Borghesi et al., 2014; Galbreath, 2011; Glass et al., 2016; Huang, 2013; Manner, 2010; Rao and Tilt, 2016) and the findings point to the different influence that male and female CEOs and board of directors have on CSD. However, a review of the relevant literature revealed that while the influence of women on boards has reached a prominent level, there is lack of research on this area in developing countries. Moreover, there is also lack of research to associate the gender of a Chairperson with CSD.

Regarding personal values, Hemingway and Maclagan (2004) pointed out that the decision that managers make on CSD is a reflection of their personal values and that values can be derived from religious beliefs. Since many religion promotes good values, religion beliefs can provide a strong foundation for a person to behave ethically (Helfaya et al., 2018; Kanagaretnam et al., 2015). Findings by Marcus et al. (2015) confirmed that the corporate actions are associated with personal values of the decision makers. By using the proxy of Malay directors, Haniffa and Cooke (2002) found the companies with higher proportion of Malay directors tend to

provide more voluntary disclosures. They suggest the reason is being due to the espoused Islamic values in Malays directors. Angelidis and Ibrahim (2004) did a comparative study on individual CSR orientation between students with high level of religiousness and low level of religiousness. They found students with high level of religiousness exhibit more ethical consideration when dealing with CSR than their counterparts. Brammer et al. (2007) compared the CSR attitudes between religion believers and non-believers. They discovered while Buddhist practitioners had a higher preference for CSR than non-believers, Hindus, Muslims and Other Christians practitioners had less preference for CSR than non-believers. Further, they found Muslims are more supportive for philanthropic activities. A subsequent study by Ramasamy et al. (2010) shows that religiosity influence CSR among consumers in Hong Kong and Singapore. While the religiosity influence on CSR in Singapore was based on egotistical motives, the religiosity influence on CSR in Hong Kong is based on both altruistic and egotistical reasons. Despite the evidence suggesting attributes of Chairperson, CEO and board of directors are likely to influence decision for CED, research linking managerial decision making based on Islamic values and gender with CED is limited and in need of more in-depth consideration.

There are also studies that examine the influence of institutional ownership and CSD. However, findings show that the impact is mixed. On the one hand, companies with more institutional ownership or government institutional ownership are found to provide more CSD (Amran and Devi, 2008; Cotter and Najah, 2012; Iatridis, 2013; Jo and Harjoto, 2012; Muttakin and Subramaniam, 2015; Rao et al., 2012). Cotter and Najah (2012) attributed the positive influence of institutional investors on global climate change disclosure due to the strong powers that institutional investors have. This is because institutional investors exert strong influence on the managerial decision.

Amran and Haniffa (2011) argued that companies with government institutional ownership are motivated to provide more CSD due to they are politically visible. However, Amran and Haniffa (2011) failed to find any association between

government institutional ownership and CSD. A similar findings of no association between institutional ownership or government institutional ownership and CSD was also evidenced in other studies (Ghazali and Weetman, 2006; Haji and Ghazali, 2013a; Haniffa and Cooke, 2002; Stanny and Ely, 2008). While they are increasing debates about the roles of institutional owners on CSD, the existing studies generally frame the overall institutional owners or in the context of Malaysia have used government institutional owners to examine their influence on CSD. The tendency to use either one category of institutional investors potentially limits the understanding on the magnitude of effect that different types of institutional owners have on CED since each type of institutional owners could have different characteristics (How et al., 2014). However, research linking the component of institutional owners of non-government institutional ownership is rare and in need of more in-depth consideration. Moreover, the existing findings on the association between government institutional ownership and CED are restricted to data in 2009. Therefore, it is timely to extend the component of institutional investors and the period of examination to a more current period.

3.6 Summary

This chapter critically reviews the empirical findings of CED at the international and Malaysian levels by starting with an overview of the definitions of CED. This chapter further presents the discussion of CED measurement involving CEDQty and CEDQ, and moves forward to offering the empirical evidence of CED practices in Malaysia. This follows by the discussion on the factors affecting CEDQty and CEDQ. All of these provide background and context in identifying gaps in the selected literature that lead this thesis to choose institutional theory as the main theory, and supported by resource-based theory and Islamic accountability in explaining the CEDQty and CEDQ practices by Malaysian companies. The research framework that guides the research design and analysis, and hypotheses development are presented in the next chapter.

CHAPTER 4:

RESEARCH FRAMEWORK

4.1 Overview

Chapter 2 reviews the theoretical frameworks that motivates and explains Corporate Environmental Disclosure (CED), while Chapter 3 presents the empirical analyses of Corporate Environmental Disclosure Quantity (CEDQty) and Corporate Environmental Disclosure Quality (CEDQ). Informed by prior literature, this chapter proposes the theoretical framework for this thesis.

This thesis integrates multiple theoretical perspective to develop a framework suitable to interpret CED in Malaysia. The central theory used for analysis in this thesis is institutional theory which is complemented by Islamic accountability and resource-based theory. Institutional theory provides a strong foundation to explain the varying pattern of CED and factors associated with CED in Malaysia at particular points in time, and over time. The thesis undertakes multi-level institutional analysis of CED in Malaysia. They are political and economic level, organisational field level, and individual organisation level. Institutional theory offers a comprehensive understanding about how the coercive, normative and cultural-cognitive institutions of CED emerge and how they interact with individual organisations (Wooten and Hoffman, 2016). Organisational responses to institutional influences can be related to legitimacy, resources, stability and survival (Meyer and Rowan, 1977; Oliver, 1991).

Islamic accountability can enrich the argument of institutional theory by introducing the notion of accountability in Islamic religion in its own right or integrated with institutional theory as sources of institutional pressures which has been under researched (see Section 2.3.3). With regard to resource-based theory,

this thesis enhances Oliver's (1991) argument that company-specific characteristics are resources that can be constraints and options for strategic responses to institutional pressures for CED by proposing that the same company-specific characteristics can be viewed as input resources that lead to output resources in the form of CEDQty and CEDQ. In the production of output resources, a dynamic link exists due to the exchange of intra-company and inter-company resources which lead to dynamic capabilities, another form of resources (Branco and Rodrigues, 2006; McWilliams and Siegel, 2001). Despite this, the integration of Islamic accountability and resource-based theories into institutional theory, especially in relation to the former has been found to be underdeveloped in the existing literature. Moreover, within the domain of CED, the empirical findings in the literature have shown that the Islamic influence and gender variables have been insufficiently addressed, not only in the context of Malaysia, but also at the global level.

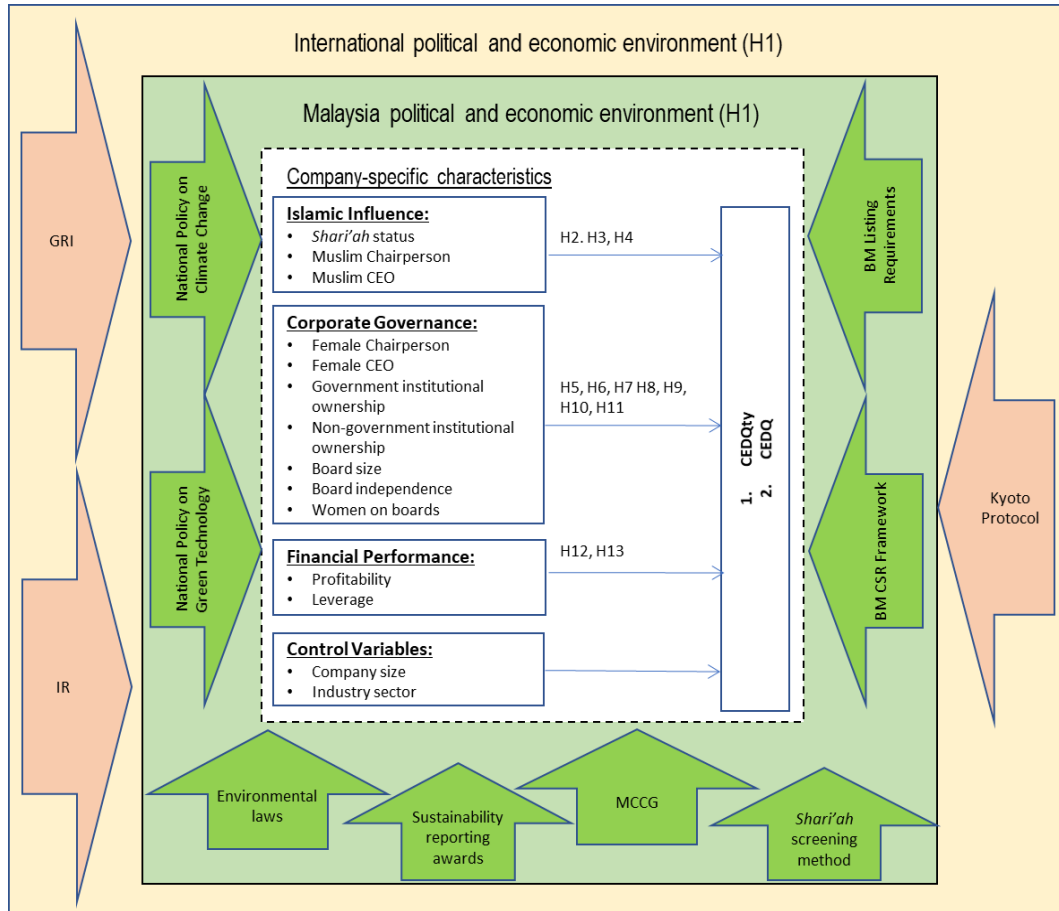
Accordingly, the objective of this chapter is to develop a framework that links CEDQty and CEDQ based on the institutional theory and integrates the Islamic accountability and resource-based theories into institutional theory, which suit the unique institutional setting of Malaysia. Section 4.2 provides in-depth discussion about the proposed multi-theoretical framework. Section 4.3 specifies the evolving institutions in the Malaysian context and Section 4.4 describes the organisational field level that form the background of the framework. Section 4.5 outlines the hypotheses (including two control variables) to explain the possible association between a country contextual factor and individual company-specific characteristics factors to the CEDQty and CEDQ. To empirically test the hypotheses based on the conceptual framework, this thesis constructs two operational models in Section 4.6. Finally, Section 4.7 provides a summary of this chapter.

4.2 Conceptual Framework

The theoretical objective of this thesis is to develop a framework that will enrich the understanding of the patterns of CEDQty and CEDQ reporting practices and to advance the analysis of the relationship between both institutional changes and company characteristics, and CEDQty and CEDQ in Malaysia.

The framework of this thesis is based on a multi-theoretical perspective of institutional, Islamic accountability and resource-based theories. It differs from the CED studies in Western countries (see Yang et al., 2015) and existing Malaysian studies that have largely adopted a single theory of either legitimacy theory, agency theory or institutional theory (e.g. Ahmad and Haraf, 2013; Amran and Haniffa, 2011; Iatridis, 2013; Said et al., 2013). The use of multi-theoretical perspective in this thesis responds to the call by Hahn and Kuhnen (2013) to adopt a multi-theoretical perspective on CED research. Figure 4-1 presents the conceptual framework of this thesis.

Figure 4-1: Conceptual framework



As shown in Figure 4-1, this thesis attempts to examine the link between institutional changes occur at the international and Malaysian political and economic environment, company-specific characteristics, and the quantity and quality of CED reporting (CEDQty and CEDQ) for the period between 2006 and 2014. Drawing from institutional theory as the primary theory of this thesis, Figure 4-1 frames the institutional systems into three levels: political and economic level, organisational field level, and individual organisation level.

- (i) The political and economic level refers to the international and Malaysian political and economic environments. At this level, this thesis undertakes a historical analysis of the changing political and economic environment in Malaysia (Section 4.3).

- (ii) The organisational field level is formed around the issues of CED. Scott (2014 p. 259) explains organisational field encompasses “relevant actors, institutional logics, and governance structures that empower and constrain the actions of both individuals and organizations in a delimited social sphere.” Thus, members of the organisational field could also include multiple institutional actors (such as industry associations, regulators, organisations). At this level, this thesis describes the changing institutional pressures exerted by multiple institutional constituents operating in the field of CED (Section 4.4).
- (iii) The individual organisation level refers to the individual company-specific characteristics. At this level, this thesis analyses how company-specific characteristics of Malaysian companies interact with institutions in the organisational field of CED (Section 4.5).

Between 2006 and 2014, some significant events took place at the political and economic level. These events include:

- Malaysia’s commitment to Kyoto Protocol: in 2005 of reducing carbon emission to 40% by 2020 (relative to 2005 baseline); and in 2013 and 2014 of reducing carbon emission to 45% by 2030 (relative to 2005 baseline).
- Revised 2006 GRI3, 2011 GRI3.1, 2013 GRI4 by GRI (Global Reporting Initiative);
- Introduction of 2013 IR (Integrated Reporting) framework by IIRC (International Integrated Reporting Council);
- Malaysia’s policy response to global climate change through the issuance of *2009 National Policy on Climate Change*²³ and *2009 National Policy on Green Technology*²⁴;

²³National Policy on Climate Change is under the purview of Ministry of Natural Resources and Environment, Malaysia (now known as Ministry of Water, Land and Natural Resources, Malaysia).

²⁴National Policy on Green Technology is under the purview of Ministry of Energy, Green Technology and Water, Malaysia (now known as Ministry of Energy, Science, Technology, Environment and Climate Change, Malaysia).

- Revised 2006 *BM MM Listing Requirements* (Bursa Malaysia Main Market Listing Requirements) and introduction of the 2006 *BM CSR Framework* (Bursa Malaysia Corporate Social Responsibility Framework) by Bursa Malaysia²⁵;
- Introduction of the *Environmental Quality (Industrial Effluent) Regulations 2009* as a subsidiary law on *Malaysian Environmental Quality Act 1974* and the revised *Malaysian Environmental Quality Act 1974 (Amended 2012)*;
- The pre-2006 and the addition in 2009 of sustainability reporting awards to companies by the accounting profession, including MIA²⁶, MICPA²⁷, ACCA²⁸ Malaysia and PwC²⁹ Malaysia;
- Revised 2007 *MCCG* (Malaysian Code of Corporate Governance) and 2012 *MCCG* by SCM³⁰ (Securities Commission Malaysia); and
- Revised bi-annual issuance of *Shari'ah*-compliant companies listing in 2007 and in 2012, a revised screening method for *Shari'ah* assessment by SAC³¹ (*Shari'ah* Advisory Council).

In tandem with the evolving nature of institutions, this thesis views that such events possibly trigger institutional changes at the three levels of institutional systems in the context of Malaysia. Institutional theory is used as the primary theory because

²⁵Bursa Malaysia is the name of Stock Exchange of Malaysia (formerly known as Kuala Lumpur Stock Exchange) and established in 1973. Bursa Malaysia is the regulatory body that governs the Malaysian capital market through requirements and rules including BM Listing Requirements (www.bursamalaysia.com/market/regulation).

²⁶ MIA or Malaysian Institute of Accountants is a body of accountancy profession in Malaysia that was established by virtue of the Malaysian Accountants Act, 1967 (www.mia.org.my).

²⁷ MICPA or Malaysian Institute of Certified Public Accountants is a Malaysian chapter of CPA membership.

²⁸ ACCA or Association of Chartered Certified Accountants is the international body for professional accountants.

²⁹ PwC or PriceWaterhouseCoopers is one of the leading professional accounting firms internationally.

³⁰ SCM or Securities Commission Malaysia is a regulatory body that was established under the Securities Commission Malaysia Act 1993 and reports to the Ministry of Finance. SCM has power to govern the capital market by virtue of Capital Markets and Services Act 2007 (CMSA) and Securities Industry (Central Depositories) Act 1991 (www.sc.com.my/legislation-guidelines).

³¹ SAC or *Shari'ah* Advisory Council is structured under the Islamic Capital Market or ICM. The role of SAC is to assist Bursa Malaysia in approving and updating the list of *Shari'ah*-compliant companies (www.sc.com.my/about-us).

of its strength in explaining why the reporting of CED are changing over time and how the changes occur at multilevel of institutional systems (Scott, 2014). It also enables justification of the changes in institutions in a two-way relationships: top-down influences and bottom-up responses by explaining the reasons for pressures and responses are derived from regulative (coercive), normative and cultural-cognitive (mimetic) aspects (Scott, 2014).

By using the multilevel of analyses, institutional theory explains that institutions are capable of operating differing levels to exert institutional pressures for CED and the variations in responses for institutional pressures are due to the connection between the individual organisation level and the organisational field level. These strengths of institutional theory enable this thesis to examine how the institutional changes in Malaysia between 2006 and 2014 and company-specific characteristics can influence CED.

The Islamic accountability perspective complements institutional theory by explaining accountability related to CED from the perspective of religion and that religion can be viewed as three sources of pressures (regulative, normative and cultural-cognitive) for CED. This thesis takes the perspective that the CED itself is a symbol of accountability to the environment and the Islamic influence variables under company-specific characteristics is the organisational actor that can fulfill accountability. The resource-based theory also complements institutional theory in that it explains how the use of company-specific characteristics as input resources in the process of reporting for CED as output resources enables companies to build dynamic capabilities, a different type of resources. In turn, the whole process of strategic response to institutional pressures for CED will assist companies in achieving competitive advantage due to the characteristics of resources that they have which are valuable, rare, inimitable, non-substitutable and imperfectly mobile (Barney, 1991; Hart, 1995; Peteraf, 1993). This perspective enhances Oliver's (1991) argument that resources can become a constraints and options for strategic responses to institutional pressures.

The following section delves deeper into the changing political and economic environment in Malaysia to provide a context in understanding the institutional changes between 2006 and 2014.

4.3 Political and Economic Environment in Malaysia

4.3.1 Political Environment in Malaysia

Since its independence day on 31 August 1957, Malaysia has gone through various transformations and positioned itself from a poor country to one of the most developed emerging countries in the world. According to Gomez and Jomo (1999), this position is owing to the Malaysian political structure that is socially constructed based on ethnicity, with Bumiputera the major ethnic groups in Malaysia. This was influenced by British colonialism, which separated ethnicity according to economic function. Accordingly, Malaysian political and economic character largely depends on ethnicity which informs cultural institutions (Hooghiemstra et al., 2015; Milne and Mauzy, 1999; Ong, 1990; Thompson, 2003).

There are three major ethnicities in Malaysia, and each of these form their own political parties, namely UMNO (United Malay National Organisation) representing the Malays, MCA (Malaysian Chinese Association) representing the Chinese, and MIC (Malaysian Indian Congress) representing the Indians (Noh, 2014; Pepinsky, 2009). A combination of these ethnic-based political parties constitutes the coalition of Barisan Nasional. Since 1957 until 8 May 2018, the Barisan Nasional has been appointed as the ruling coalition through parliamentary elections at the federal government level, but not the ruling coalition at all state government levels during certain periods of time (Brown, 2008; Noh, 2014; Saravanamuttu, 2009). For example, in the 2008 Malaysian General Election, the Barisan Nasional led the federal government but 5 of the 13 states in Malaysia were led by the opposition. While Barisan Nasional continues to lead the federal government in the 2013 Malaysian General Election, the opposition only

maintained three of the five states previously won in 2008. As the ruling government is responsible for setting up economic policies, continuation of the ruling government at federal level ensures continuity of economic policies, but this may not necessarily be the same when there are changing governments at the state level. This could be due to different emphasis put forward by different political parties that lead the state government. Consequently, these organisational changes have some influence on companies, in particular when the government has some shares in the companies.

There is evidence that federal government-owned companies incur significantly lower audit fees charged by large audit firms than state government-owned companies (Liu and Anbumozhi, 2009). Wahab et al. (2011) have found that the external influences on companies can be exerted through political intervention. Ramasamy et al. (2007) showed that internal characteristics of companies as represented by ethnicity play a role in how companies respond to CSD. Some researchers have also discovered that differences in a country's political and economic environment, can contribute to different CED (Amran, Lee, et al., 2014; Michelon and Parbonetti, 2012). Therefore, it is clear that companies are subjected to external and internal influences at international and national levels. Thus, it is pertinent to understand how the political environment shapes the economic landscape in Malaysia and in turn influences the effort towards environmental protection and CED.

4.3.2 Economic Environment in Malaysia

To address Malaysia's stance on environmental protection, it is noteworthy to recognise Malaysia's leadership of the ruling coalition that has brought Malaysia to its current state. To date, seven prime ministers have led the country. The late Tun Abdul Razak who was the Second Prime Minister of Malaysia crafted the *NEP* (*New Economy Policy*) in 1971 with the objective of narrowing the inequality gap in economic distribution between the Malays as the majority population and the

Chinese as the minority population. This policy was designed following the race riots in May 1969. To narrow the economic inequality, the policy targeted 30% Bumiputeras corporate equity ownership by 1990. Although the target had not been fulfilled in 1990, there was a substantial increase in Bumiputeras corporate equity ownership from 2.4 percent in 1970 to 19.3 percent in 1990 (EPU, n.d., p. 1).

The above achievement mainly came about through GLICs (government-linked investment companies) that invest in publicly-listed companies. The investee companies where GLICs have a controlling stake are known as the GLCs (government-linked companies). GLICs comprise federal government-owned companies: MOF Inc. (Ministry of Finance Incorporated), and Khazanah (Khazanah Nasional Bhd); and federal government sponsored pension and investment funds: LTAT (Lembaga Tabung Angkatan Tentera), EPF (Employees Provident Fund), KWAP (Kumpulan Wang Persaraan (Diperbadankan)), LTH (Lembaga Tabung Haji), and PNB (Permodalan Nasional Berhad) (Malaysian Government, 2008, 2010b). In addition to narrowing the economic disparity, these GLICs act as a vehicle in promoting government economic and social policies, including environmental protection. Therefore, as these GLICs are subjected to government oversight by the Putrajaya Committee on GLC High Performance and the PAC (Public Accounts Committee), they are expected to be the leader of CED in private sectors due to their controlling stake in the GLCs (PAC, 2015; PCG, 2015).

Tun Dr Mahathir Mohamad, who is the seventh (from 9 May 2018) and was the fourth Prime Minister of Malaysia (1981-2003) was a champion of Malaysia's status as a developing country. Milne and Mauzy (1999) argued that his remarkable contribution is the setting up of *Vision 2020*, that is expected to direct Malaysia to become a fully developed country by 2020. Since 1991, *Vision 2020*, which encapsulates nine goals that integrates economic, political, social, spiritual, psychological and cultural dimensions, has been the national mission for Malaysia (EPU, n.d.).

In preparation for *Vision 2020*, the Malaysian Government has crafted three key national policy frameworks, namely, the *NDP (National Development Policy 1991-2000)*, the *NVP (National Vision Policy 2001-2010)*, and the *NTP (National Transformation Policy 2011-2020)*. The pillars for each of the key policies are explained in the five-year Malaysia national plans and the annual Malaysian budgets to drive the attainment of *Vision 2020*.

The aims of the NDP are articulated to ensure a steady development of key economic sectors and to reduce socio-economic imbalances among society. The *NDP* was supported by the *Sixth Malaysia Plan 1991-1995* and *Seventh Malaysia Plan 1996-2000* (Malaysian Government, 1990, 1995). The *NVP*, which marked a second phase movement towards *Vision 2020*, concentrated on creating a resilient and competitive nation through the implementation of the *Eighth Malaysia Plan 2001-2005* and *Ninth Malaysia Plan 2006-2010* (Malaysian Government, 2001, 2006b). The final phase of the journey towards *Vision 2020* is the *NTP* that focuses on strengthening the nation to become a high-income economy that is both inclusive (enables all communities to fully benefit from the wealth of the country) and sustainable (meets present needs without compromising future generations). The *Tenth Malaysia Plan 2011-2015* and the *Eleventh Malaysia Plan 2016-2020* provide a support to the *NTP* (Malaysian Government, 2010c, 2015). To ensure proper execution of the *NTP*, the Malaysian Government (2009b) issued the *NEM (New Economic Model)* with the goal to balance a developmental and competitive economy with a high quality of life and a high level of income. This was followed by the launch of *GTP (Government Transformation Program)* in 2009 that acts as the engine of the *NEM*. The *GTP* sets seven *NKRA (National Key Results Areas)*. One of it is to improve the socio-economic growth of Malaysian by improving basic infrastructure including road, water, electricity and maintenance. This links directly to the business of utilities industry, that is, one of the industry selected in this thesis.

4.3.2.1 National Policies on Environmental Responsibility

While aiming at achieving the status of the fully developed country envisioned in *Vision 2020*, Malaysia recognises that it is possessed of a wealth of environmental resources including land, mineral, forestry, water, and biodiversity. Therefore, the aforementioned three key policies also emphasise environmental responsibility and sustainability in improving the quality of life, consistent with environmental awareness at global level (Malaysian Government, 2001). This is manifested in the *Eighth Malaysia Plan 2001-2005* when the Malaysian Government issued the *2002 National Policy on the Environment* as a measure towards sustainable management of natural resources and conservation of the environment. The responsibility for this policy is jointly shared by the Ministry of Energy, Science, Technology, Environment, and Climate Change, Malaysia³² and the Ministry of Water, Land and Natural Resources, Malaysia³³.

There are three objectives in the *2002 National Policy on the Environment*:

- (i) A clean, safe, healthy and productive environment for present and future generations.
- (ii) Conservation of the country's unique and diverse cultural and natural heritage with effective participation by all sectors of society.
- (iii) Sustainable lifestyles and patterns of consumption and production.

(Malaysian Government, 2002a, p. 3)

These objectives are consistent with Malaysia's ratification of the Kyoto Protocol in 2002. The Kyoto Protocol extends the aim of the UNFCCC (United Nations Framework Convention on Climate Change) to reduce greenhouse gases emissions and Malaysia has committed to reduce carbon emission to 40% by 2020 from the

³²This new name takes effect following the 14th Malaysian General Election on 9 May 2018. Previously known as Ministry of Energy, Green Technology and Water, Malaysia and Ministry of Science, Technology and the Environment, Malaysia.

³³This new name takes effect following the 14th Malaysian General Election on 9 May 2018. Previously known as Ministry of Natural Resources and Environment, Malaysia and Ministry of Science, Technology and the Environment, Malaysia.

2005 baseline (Malaysian Government, 2010a). Malaysia renews the commitment to reduce carbon emission by 45% (relative to 2005 baseline) by 2030 following the decisions of UNFCCC meeting in Poland during 2013, and in Peru during 2014.

The Malaysian Government (2002b) continues its support on environmental protection by giving subsidies and tax incentives for the use and production of renewable energy that is environment-friendly in the Budget 2003. As a result, the *Ninth Malaysia Plan 2006-2010* reported that the environmental efforts in the *Eighth Malaysia Plan 2001-2005* had successfully secured a decline in the number of polluted rivers, a good to moderate level of air quality, and forested areas remaining over more than half the country's land area. This appears to be a good environmental indicator for the country.

Following this impressive progress of the *Eighth Malaysia Plan 2001-2005*, the Malaysian Government (2009c, 2009d) has issued the *2009 National Policy on Climate Change* and the *2009 National Policy on Green Technology* as a response to international calls for moving towards a low-carbon economy. These two policies, which were issued under the *Ninth Malaysia Plan 2006-2010*, were aimed at safeguarding better environmental protection while encouraging efficient consumption of natural resources and boosting the utilisation of environment-friendly technology.

Specifically, the stated objectives of the *2009 National Policy on Climate Change* are to: streamline climate change through efficient resource management and environmental conservation; coordinate legislation, policies, and measures to mitigate climate-change and adapt low-carbon economy; and reinforce institutionally to drive and facilitate implementation of the measures. Meanwhile, the outlined objectives of the *2009 National Policy on Green Technology* are more focused towards: minimising energy consumption; encouraging green technology industry; promoting innovation in green technology; ensuring continuous effort for sustainable development and conservation; and strengthening public education and awareness on green technology.

To support the effort of environment-friendly technology as outlined in the *2009 National Policy on Green Technology*, the Malaysian Government (2009e) has established the GTFS (Green Technology Financing Scheme) which amounted to RM1.5 billion in the Budget of 2010 to further encourage industry participation in promoting environmental protection. Later, in the *Tenth Malaysia Plan 2011-2015*, the fund was increased by RM2 billion, with the application period extended until 31 December 2015 as announced in the Budget 2013 (Malaysian Government, 2012a).

Additionally, the Budget 2013 also stressed the role of companies in CSR although the majority of Malaysian companies show CSR by engaging in philanthropic activities. Therefore, to increase the level of engagement in environmental responsibility, the Malaysian Government (2012a) requires the GLICs and GLCs to champion the cooperation between the government, companies and community at large. Despite the above policies and budget allocations that mark Malaysian Government dedication to environmental protection, the designated role of GLICs and GLCs in promoting CED among publicly-listed companies is subject to examination in this thesis in the form of proportion of government institutional ownership in companies.

4.3.2.2 Environmental Legislations and Reporting Requirements

In addition to the above policies, the Ministry of Energy, Science, Technology, Environment, and Climate Change, Malaysia has empowered the DOE (Department of Environment) to enforce the *EQA 1974 (Environmental Quality Act 1974)* as an environmental regulation to prevent and control environmental pollution. The *EQA 1974* was recently amended in 2012 by giving power to the Director General of DOE and authorised officers to request any form of environmental information from companies as provided under Section 37 and Section 48AC (Malaysian Government, 2012b). However, the provisions do not require companies to disclose the environmental information in public. Despite this, the DOE has prosecuted a

substantial number of cases of various offences committed by a different entity under the *EQA 1974* from 2008 to 2014 as in Table 4-1.

Table 4-1: Summary of court cases of offences committed under the *EQA 1974* during 2008-2014

Offences / Year	2008	2009	2010	2011	2012	2013	2014
Licensing	111	152	125	114	69	61	67
Air pollution	418	571	682	539	78	98	97
Water pollution	154	173	215	96	68	8	8
Noise pollution	0	0	1	0	0	1	0
Scheduled waste	13	13	8	5	3	2	2
Environmental Impact Assessment (EIA)	8	14	15	7	8	11	8
Other offences	6	17	18	51	76	157	129
Total	710	940	1,064	811	302	338	311

Source: Court case summary 2008 to 2014 by Department of Environment Malaysia

Table 4-1 summarises the court cases from 2008 to 2014 prosecuted under seven main offences of *EQA 1974*. Overall, the number of court cases had markedly increased from 710 cases in 2008 to 1,064 cases in 2010. The increase of almost 50% was mainly contributed by an increase in offenses pertaining to air pollution (75%), and water pollution (17%) in 2010. The increasing trend, however, has dropped to 311 cases (-71%) in 2014 from 1,064 cases in 2010. A closer examination in Table 4-1 indicates that this has resulted due to a reduction in air pollution offences (-78%), and water pollution offences (-27%), but at the same time adding in other offences (15%). A detailed review of other offences reveals that the majority of the offences are derived from breaches of *Environmental Quality (Industrial Effluent) Regulations 2009* (Malaysian Government, 2009f), which are directly linked to companies. Altogether, these statistics show that air and water pollution remains the major environmental issue in Malaysia to-date at various entity levels while industrial effluent reflects a major environmental issue at company level, constituting the majority of court cases on environmental offences.

While the *EQA 1974* tackles issues related to environmental pollution, the *Occupational Safety and Health (Control of Industrial Major Accident Hazards)*

Regulations 1996 deals with accidents in workplaces that contribute to environmental degradation (Malaysian Government, 1996). Section 22 of the regulation requires companies to communicate major accident hazards to the public by providing necessary information as stipulated in Schedule 3 of the regulation. This is linked with the MASB (Malaysian Accounting Standard Boards) through *MFRS 101*³⁴, which promotes non-financial disclosures in the notes to the financial statements. In addition, the *MFRS 137*³⁵ (Appendix C) provides specific examples on the provision for environmental related expenses, indicating that environmental information has its own weight in the financial statements. This is further buttressed by the issuance of *IFRIC Interpretation 5*³⁶ that sets out the disclosure requirements for decommissioning of assets, or performing environmental restoration or rehabilitation. Nonetheless, all the policies, legislations and reporting requirements that represent regulative institution appear to be ineffective for promoting CED among companies in Malaysia given that CED remains at a low level (Hamid et al., 2015).

4.3.2.3 Sustainability Reporting Awards

Following the ineffectiveness of the above efforts to instil environmental responsibility in companies, and thus CED, the professional accounting bodies in Malaysia have established environmental awards. In 2000, the NACRA (National Annual Corporate Reporting Awards) on Best Environmental Reporting was initiated through a collaboration between the MIA (Malaysian Institute of Accountants), the MICPA (Malaysian Institute of Certified Public Accountants) and the BM (Bursa Malaysia). Later, in 2002 the ACCA Malaysia in partnership with the DOE Malaysia launched the ACCA MaSRA Awards³⁷ (ACCA Malaysia, 2002). Subsequently, in 2009 the PwC Malaysia in co-operation with The Star

³⁴ A version of Malaysian Financial Reporting Standards on *Presentation of Financial Statements* (MASB, 2012a)

³⁵ A version of Malaysian Financial Reporting Standards on *Provisions, Contingent Liabilities and Contingent Assets* (MASB, 2012b)

³⁶ International Financial Reporting Interpretations Committee on *Rights to Interests Arising from Decommissioning, Restoration and Environmental Rehabilitation Funds* (IFRIC, 2012)

³⁷ ACCA MaSRA Awards or ACCA Malaysia Sustainability Reporting Awards. Formerly known as the ACCA-MESRA Awards or ACCA Malaysia Environmental and Social Reporting Awards

newspaper, the ICR (Institute of Corporate Responsibility Malaysia), and the SIDC (Securities Industry Development Corporation Malaysia) introduced the StarBiz-ICR Malaysia CR (Corporate Responsibility) Awards. The government, through the MWFC (Ministry of Women, Family and Community Development), inaugurated the Prime Minister's CSR Awards in 2007. In addition to rewarding companies with good CSD, the main purpose of the awards was to create environmental awareness among companies (ACCA Malaysia, 2004; MWFC, 2015). This appears to suggest that the introduction of the awards has marked the rising alarm with which the government and professional accounting bodies have counteracted the deficiency of companies' commitment towards upholding environmental protection as envisioned in *Vision 2020*. The effort by the professional accounting bodies, therefore, demonstrates that the normative institution of CED has taken place in Malaysia (Said et al., 2014).

4.3.2.4 Silver Book, BM Listing Requirements and BM CSR Framework

Aside from the awards, the Malaysian Government (2006c) produced the *Silver Book*, a strategic framework for GLCs to proactively contribute in CSR, that is targeted to GLCs. The stated aim is to stress the impact of business operations over the environment, and therefore GLCs are required to implement CSR and CSD in exemplifying support for the environmental policies pronouncement introduced earlier. Esa and Ghazali (2012) found that the *Silver Book* requirements demonstrated a positive impact on the CSD of the Malaysian GLCs.

The year 2006 also marked the end of voluntary CSD and the beginning of mandatory CSD by publicly-listed companies. Since 2007, the BM has enforced all publicly-listed companies to report CSD as a mandatory requirement (Bursa Malaysia, 2006c). Following this, all publicly-listed companies in Malaysia are required to adhere to the revised *BM MM Listing Requirements (Bursa Malaysia Main Market Listing Requirements)* effective from 2007 in conjunction with the launched of *BM CSR Framework* in 2006 (Bursa Malaysia, 2006a).

The *BM MM Listing Requirements* (Paragraph 29, Part A, Appendix 9C) require that companies provide CSD in their annual reports in reference to four areas of disclosures in the *BM CSR Framework*: marketplace, workplace, community, and environment. However, this thesis posits that a limitation of the *BM CSR Framework* is that it has not specified the content and amount of disclosures for each category, and whether companies are required to report for all categories. Moreover, the *BM CSR Framework* is silent about the measurement issues concerning such disclosures, leaving room for companies to choose any type of disclosures according to their preferences. Accordingly, this thesis postulates that some companies are complying with the mandatory CSD but are making a statement that companies do not undertake any CSR activities.

In connecting this to environmental disclosure, such statements appear not to be a genuine case if the nature of business for the respective companies is closely related to environmental activities. As such, it can be concluded that the mandatory requirement of the *BM MM Listing Requirements* of CSD is, in essence, a vague statement. Therefore, this thesis suggests that follow-up guidelines are required to help companies in addressing and operationalising company-specific environmental responsibility areas. Nonetheless, the BM is seen as a regulative institution in driving CSD in Malaysia, consistent with the roles played by other stock exchanges including the Johannesburg Stock Exchange and the Nasdaq Stock Exchange in supporting the respective government policies (Ernst & Young and Boston College Centre, 2014; Ernst & Young and GRI, 2014).

It was not until 2010 that the BM (2010) published *Powering Business Sustainability: A Guide for Directors* that appears to assist directors in bringing sustainability to the board room and thus, address how top management levels are required to respond to sustainability and sustainability reporting as stipulated in the BM Listing Requirements. Subsequent to that, the CCM (Companies Commission of Malaysia) (2013) also issued *Best Business Practice Circular 5/2013 - Corporate Responsibility: Guidance to Disclosure and Reporting*. The objectives of the circular are to promote the importance of CSD, to increase CSD awareness, and to

guide disclosure by giving companies the option to follow the GRI, the UNGC or the ISO 26000³⁸, that guide the rest of companies in the world. One apparent commitment of the CCM of making the circular effective is by including CSR (or environmental) initiatives as part of business review in the Directors' Report through the revised *Malaysian Companies Act 2016*.

Furthermore, the CCM (2015) has issued *A Toolkit to Implement Green Business* which provides guidelines on how a business can run green business activities in terms of administration, supply chain and operations. This includes how to measure and report green business activities. Meanwhile, Bursa Malaysia (2015a) had also revised its *2006 BM MM Listing Requirements* in 2015 and revised *Bursa Malaysia Sustainability Reporting Guide* twice in 2015 and 2018 respectively, which was previously known as the *2006 BM CSR Framework*. The latest version of the *BM CSR Framework* covers what and how to report, and related measurement pertaining to reporting. Although guidelines issued in 2015 are outside the time boundary of this thesis, they are essential as a mark of the insufficiency of the guidelines issued prior to 2015 in promoting CED among companies in Malaysia.

4.3.2.5 MCCG and MSWG

Disclosure or reporting is an important element of accountability and responsibility. Recognising that reporting is a function of corporate governance, and corporate governance is crucial to ensure capital market stability, in 2000 the Malaysian Government introduced *MCCG (Malaysian Code of Corporate Governance)* and *MSWG (Minority Shareholder Watchdog Group)*. While the SCM is a regulatory body that has enforcement power in the setting up and practices of *MCCG*, the *MSWG* is a self-governing and non-profit body that helps the SCM and the Bursa Malaysia to watch shareholders' activism and do corporate governance research through institutional shareholders (MSWG, 2012; SCM, 2011).

³⁸ISO 26000 refers to Social Responsibility Guidance Standard on how businesses and organisations can operate in a socially responsible way emphasising on the health and welfare of the society (www.iso.org/iso/home/standards/iso26000.htm)

The 2000 *MCCG* was established based on recommendations from the UK reports: Cadbury Report 1992 and Hampel Report 1998, as an aftermath of the 1997/1998 Asian Financial Crisis (Haniffa and Hudaib, 2006). In defining corporate governance, the SCM made reference to the OECD (Organisation for Economic Co-operation and Development) (2004) definition and modified it according to Malaysia context. These processes show the presence of mimetic action by SCM in aligning corporate governance practices in Malaysia with the international practices.

Following this, corporate governance is defined as:

the process and structure used to direct and manage the business and affairs of the company towards enhancing business prosperity and corporate accountability with the ultimate objective of realising long-term shareholder values, whilst taking into account the interest of other stakeholders. (SCM, 2012, pp. 4–5)

The purpose of the *MCCG* is to secure the capital market by emphasising sound corporate governance (SCM, 2012). The components of corporate governance include board of directors, directors' remuneration, shareholders, and accountability and audit. In tandem with changes in the surrounding institutions at international and national levels, the *MCCG* was revised in 2007 by broadening the responsibilities of boards, audit committees and internal auditors. Such changes in the *MCCG* emerge from the ongoing interaction in the field of corporate governance. Accordingly, SCM has improved its regulative institution by exerting a stronger regulative pressures on companies for compliance to *MCCG*, compared to prior years.

Subsequent to publication of the *2011 Malaysian Corporate Governance Blueprint*, the *MCCG* was updated in 2012 that uphold eight principles. Among the principles applicable for this thesis are clarifying the roles and responsibilities of board of directors including fostering their commitment (Principles 1 and 4), strengthening board structure and composition through board independence and gender diversity

(Principles 2 and 3), recognising and managing risks (Principle 6), and provision of corporate disclosure policies in demonstrating the principles of good disclosures (Principle 7) (SCM, 2011, 2012). This change again shows the ongoing interaction in the field of corporate governance through changes in *MCCG* by SCM which then could be argued relate to change in the field of CED. This is because this thesis theorises that the corporate governance mechanisms are among the drivers for CED. This also shows the SCM regulative pressures are further strengthen to encourage compliance to *MCCG*.

The 2012 *MCCG* emphasises differentiation between the roles and responsibilities of the board of directors and the CEO (Chief Executive Officer or Managing Director) in Principle 1. This is parallel with both the *BM MM Listing Requirements* (Paragraph 7.29) and 2011 *Malaysian Corporate Governance Blueprint* that prescribe Chairperson power is superior to that of the CEO since the board is led by a Chairperson.

While the board is responsible for monitoring and advising the management of a company, the CEO is responsible for managing its daily operation (Recommendation 1.1). This is because the appointment of the board is mandated by shareholders during the AGM whereas the CEO is appointed by the board. Accordingly, it is essential for the board to establish clear roles and responsibilities for discharging its fiduciary and leadership functions to ensure sound governance (Recommendation 1.2) to safeguard the interest of shareholders and stakeholders. Therefore, the 2012 *MCCG* stresses that CEO duality (Chairperson and CEO are the same person) is prohibited as to avoid conflicts of interest in the roles and responsibilities of the Chairperson and CEO (Principle 3, Recommendation 3.4). However, prior to 2012 *MCCG*, CEO duality was a common practice in Malaysian companies (Buniamin et al., 2011; Haat et al., 2008; Said et al., 2009). To avoid such occurrence and update the functions of the board members so that they can perform their duties efficiently, directors are expected to expose to appropriate training continuously (Principle 4, Recommendation 4.2). This supports Recommendation 1.4 that when directors have appropriate knowledge from the

training, they can plan suitable strategies in promoting sustainability. This training includes CED.

Following the discussion, this thesis posits that Chairperson is position at the top ranking of decision makers, assisting by the boards of directors and CEO. Based on their position, they are able to make and influence decision regarding CED for their companies. This thesis also contends that as directors are required to attend appropriate training and promote sustainability, there is a high probability that different directors are expose to training related to environmental responsibility. This could probably widen their knowledge and accordingly a high chance that the board size could influence CED.

In relation to board independence, *2012 MCCG* (Principle 3) highlights three additional recommendations. Recommendation 3.1 requires companies to conduct an annual assessment of their independent directors to mitigate the risks of not being independent. Recommendation 3.3 necessitates independent director with a tenure of nine years in the position to seek shareholder approval prior to re-appointment, and Recommendation 3.5 requires companies to have a majority composition of independent directors if the Chairperson of the board is a non-independent director. All these recommendations make clear that the position of independent directors is critically important as this position represents other stakeholder interests in a company (SCM, 2012). Moreover, the above recommendations complement the *BM MM Listing Requirements* (Paragraph 15.02, Part B, Chapter 15) that require companies to have at least two independent directors or one-third of board members as independent directors. In this view, this thesis argues that compliant to these recommendations of board independence would strengthen the governance function and this independent directors could influence the CED practices.

On gender diversity, the Malaysian Government asserts that it accepts gender equality. To manifest this, the *2011 Malaysian Corporate Governance Blueprint* outlines a goal of 30% women on boards in publicly-listed companies by 2016, parallel with a target of 30% in public sectors as announced in 2004 (SCM, 2011).

The 2012 *MCCG* (Principle 2, Recommendation 2.2) explains that the Nomination Committee is responsible for selecting and assessing directors. Thus, in line with the goal of 30% women on boards, this thesis argues that the Nomination Committee is expected to play its role in increasing women on boards through the selection of directors.

With reference to recognition and management of risks in 2012 *MCCG* (Principle 6), Recommendation 6.1 states that one of the board functions is to establish a sound risk management framework. Accordingly, this thesis expects that the risk management framework exercises by a company should also include risk assessment related to environment that incorporates preventive and corrective measures. This thesis posits that such risk assessment, which is one of the important component in CED, supports the earlier Recommendation 1.4 in promoting sustainability strategies. This thesis also argues that a disclosure of such risk assessment is essential to inform stakeholders about the appropriate measures undertake by companies in ensuring environmental well-being practices. This disclosure corresponds to Principle 7 in 2012 *MCCG* of ensuring timely and high quality disclosure because Recommendation 7.1 emphasises about appropriate corporate disclosure policies and procedures (including CSD or CED). However, CED is not restricted to environmental risk but encompasses a broad array of items (Section 5.4.1). Thus, in ensuring a high quality CED, this thesis expects that the reporting of CED not only complete (CEDQty), but also include quantified information (CEDQ). This is only realisable if companies practise sound board governance as described in the preceding discussion. Thus, it could be argued that the *MCCG* is likely to be an effective mechanism to stimulate CED through the functionality of good corporate governance.

While the above provide details about institutionalisation of *MCCG*, it also reflects the evolving institutionalisation of SCM as the governing body of *MCCG* in regards to its regulative pressures. To ensure its effective functions, SCM requires support from MSWG. The role of MSWG is as a watchdog of institutional investors activism in Malaysia through monitoring and researching about their activities. As

this thesis hypothesises that institutional investors could influence CED, it is noteworthy to define institutional investors.

The SCM defines institutional investors as professional investors that can be categorised into pension funds, mutual funds, life insurance companies and investment banks, who act on behalf of their beneficiaries including pension fund members or depositors (MSWG and SCM, 2014). As institutional investors represent a pool of individual members this condition provides them in a good position to influence companies in practising good governance. Concurrently, they can also act as a whistleblower for malpractices. To exercise such functions, the Malaysian Code of Institutional Investor (Principle 5) suggests institutional investors to do sustainability assessments including environment in their investment decisions (MSWG and SCM, 2014). Taking this perspective, this thesis posits that institutional investors as one element of corporate governance could exert pressures on companies for CED practices when they include CED assessment in their investment decision.

4.3.2.6 ICM and SAC

In addition to *MCCG* and *MSWG*, as a government arm in the capital market, the SCM has established the ICM³⁹ and accordingly the SAC in 1996. This is in line with Malaysia's position as an Islamic country as stipulated in Article 3, *Constitution of Malaysia* (Malaysian Government, 2009a). Thus, being an Islamic country, this thesis posits that the ruling government is responsible to ensure implementation of the *Shari'ah*⁴⁰ and the setting up of both institutions by the government fulfill the principle of *maslahah* (public interest) in the *Shari'ah*.

In 2013, the ICM accounted to 56.4% from RM2,733.1 billion of Malaysian capital market (SCM, 2013a, p. 13), indicating the importance of ICM in Malaysia. While

³⁹ ICM or Islamic Capital Market was established by the Securities Commission Malaysia in 1996 and forms a part of the SCM's organisation structure. One of its role is to facilitate Bursa Malaysia with a market that was purposely designed for *Shari'ah*-concerned investors. (www.sc.com.my/about-us).

⁴⁰ Fundamental creed and manifested features of Islam

the purpose of the ICM is fulfilling a religious duty by providing capital markets that adhere to the *Shari'ah* for *Shari'ah*-compliant companies, the role of the SAC is monitoring the application of *Shari'ah*-compliant rules by such companies on a bi-annual basis. As an outcome of this exercise, the SAC produces a list of *Shari'ah*-compliant companies in May and November each year, but prior to 2007 this was in April and October (SCM, 2013b). This thesis opines that this exercise enables stakeholders, especially *Shari'ah*-concerned investors, to choose *Shari'ah*-compliant companies that fulfill their spiritual needs. Further, this thesis argues that the bi-annual frequency of *Shari'ah*-compliant companies demonstrates a stringent monitoring of *Shari'ah* practices, and consistent with Islamic accountability this would also help promoting accountability to the environment through sustainability practices.

With a membership of eleven individuals (2013 to 2016) from diverse backgrounds including scholars, jurists and market practitioners who are experts in *Shari'ah*, the SAC is controlled and regulated by the BNM (Bank Negara Malaysia or Central Bank of Malaysia) (SCM, n.d.). In exercising the role, the SAC members examine company reports, including annual reports, and make inquiries to companies. Based on these sources of information, the SAC undertakes a two-stage screening method: first, qualitative and second, quantitative assessments (SCM, 2014).

The qualitative assessment involves screening of two aspects. First, a company must have a good image based on public perception. Second, core activities of companies must benefit both the *maslahah* (public interest) of the Muslim community and the country, and if there is an existence of non-permissible activities, it must be very small and *umum balwa* (difficult to avoid), *uruf* (custom), and regard the rights of the non-Muslim community. According to the *Shari'ah*, non-permissible activities include financial activities based on *riba* (interest), gambling and gaming, manufacture or sale of non-halal or related products, manufacture or sale of tobacco-based or related products, *gharar* (conventional insurance, stock broking or share trading in non-*Shari'ah*-compliant securities),

entertainment activities that are non-permissible according to *Shari'ah*, and other activities deemed non-permissible according to *Shari'ah*.

The quantitative assessments measure the business activity benchmarks by calculating the turnover and profit before tax of the companies from non-permissible activities against four benchmarks. However, in 2012, following the implementation of *Capital Market Master Plan 2 2011-2020* by the SCM, the original screening methodology that was established in 1995 was revised by reducing the business activity benchmarks to only two benchmarks, and incorporating financial ratio benchmarks (MIIFC, 2013). Specifically, companies can possibly be classified as *Shari'ah*-compliant companies if the non-permissible activities of *umum balwa* (difficult to avoid) do not reach the five percent threshold limit (SCM, 2014). The other business activity benchmark with a maximum limit of 20% is only applicable to companies in hotel and resort operations, share trading, and stock broking. Once companies satisfy the business activity benchmarks, companies are further screened on the financial ratio benchmarks which intend to measure the elements of *riba* (interest) or *riba* related items in generating income or financing for expenses from other than the Islamic account or financing. Thus, in order to be listed as having *Shari'ah*-compliant, each of two ratios: cash over total assets, and debt over total assets, must not reach the 33% threshold limit (SCM, 2014).

The above two-stage screening method is consistent with the practice of other *Shari'ah* index providers, except that some of them adopt more stringent rules in relation to qualitative screening. For example, DJIM (Dow Jones Islamic Market Index) and FTSE (Financial Times Islamic Index Series) strictly exclude any companies that are involved in non-permissible activities according to *Shari'ah* (Ho, 2015; Pok, 2012). On the contrary, the SAC makes exclusion based on the primary business activities of company, and this is similar to the one employed by S&P (Standard & Poor Islamic Index Group) and MSCI (Morgan Stanley Capital International Islamic Index Series) (Ho, 2015). In respect of the quantitative benchmarks screening, there is a little variation in the threshold limit of the non-

permissible ratios. This implies that the SAC screening practices are parallel with the international *Shari'ah* index, except in the argument that it is more lenient in the qualitative part.

Based on the above discussion, it can be seen that the ICM and the SAC are shaped by Islamic beliefs. There are symbols of regulative, normative and cultural-cognitive institutions. The regulative institution exists due to the establishment of ICM and SAC fulfill the accountability to God in that it provides an avenue for government and stakeholders to adhere to *Shari'ah*. The stringent *Shari'ah* screening method for *Shari'ah*-compliant companies by SAC also exemplifies regulative institution because it reflects accountability based on Islamic practices. Since Islam is not only a religion but also encompasses a way of life, it embeds accountability in human beings and in the environment. This emanates from social accountability (see Chapter 2). Thus, this thesis contends that the compliance with *Shari'ah*-compliant as promoted by the ICM and the SAC can also be viewed as normative institution (group norms) and cultural-cognitive institution (taken-for-grantedness of Islamic beliefs) that reasonably be expected to lead companies to commit to CED.

In summary, the aforementioned discussions of political and economic environment in Malaysia demonstrate that there have been institutional changes inside the country, including environmental awareness and corporate governance that capture institutional changes at the international level. The next section describes changes at the organisational field level.

4.4 Organisational Field

According to Hoffman (2001), organisational field exists due to the involvement of relevant actors, institutional logics, and governance structures in some collective enterprise such as producing a product or service, carrying out specific policy or resolving specific issues. Consistent with Hoffman (2001), this thesis considers CED as an issue-based organisational field. This field provides a medium of

dialogue between various institutional constituents to achieve consensus on CED. However, individual institutional actors can also have disparate perspective on CED, resulting in different institutional pressures for CED (Scott, 2014).

Across time, organisational field together with individual organisations inhabiting this field is evolving because each of this institutional system undergoes development processes. Thus, reconfiguration of the field takes place at any point of time (Hoffman, 1999; Oliver, 1991). Hence, in the context of Malaysia's changing institutional environment, the organisational field of CED is evolving as a result of the influences of regulative, normative and cultural-cognitive institutions.

4.4.1 Regulative Institution

A regulative institution which normally derives power from political influences is closely linked to the managerial branch of stakeholder theory (DiMaggio and Powell, 1983; Kolk et al., 2008; Roberts, 1992). DiMaggio and Powell (1983, p. 150) asserted that it focuses on compliance to pressures - that are both formal (laws and regulations) and informal (agreements, codes of conducts) - exerted on companies by other organisations (e.g., regulatory bodies, government) upon which they are dependent and by cultural expectations of the society within the operation environment of the companies. Accordingly, Scott (2014) insists that when companies breach this compliance, they are subject to legitimacy threats.

In the Malaysian context (Figure 4-1), in line with the legitimacy notion in institutional theory, this thesis posits that the examples of regulative institutions can be seen from the revised *2006 BM MM Listing Requirements* and *2006 BM CSR Framework* issued by Bursa Malaysia (Haji, 2013b; Hamid et al., 2015; Othman et al., 2011; Sulaiman et al., 2014) (detailed in Section 4.3.2.4); Malaysia's policy response to environmental responsibility (detailed in Section 4.3.2.1); amendment of Malaysian environmental laws (detailed in Section 4.3.2.2); revised *MCCG* issued by SCM (detailed in Section 4.3.2.5); and the setting up of ICM, SAC, the

revised bi-annual assessment and *Shari'ah* screening method for *Shari'ah*-compliant companies by SAC (detailed in Section 4.3.2.6). However, while the *MCCG* has undergone two revisions, past research only evidenced the impact of the revised 2007 *MCCG* on CSD and there was limited empirical results in CED (Haji, 2013b). Moreover, to the best of the researcher's knowledge, the impact from other regulative institutions above has not been documented in prior literature.

This thesis also proposes that the Islamic accountability can be viewed as regulative institutions because the setting up of ICM and SAC by the Malaysian Government fulfills the principle of *maslahah* (public interest) in the *Shari'ah* and the CED reporting symbolises the accountability to the environment which reflects the coercive pressure on Muslims to be ultimately accountable to God.

4.4.2 Normative Institution

Normative institution originates from social obligation and professionalisation that stem from compliance to pressures related to rules of thumb, standard operating procedures, occupational standards, and educational curricula (Hoffman, 1999, p. 353). Hoffman extended this by indicating that universities, professional institutions and trade associations are examples of a normative institution. Compliance with them is merely for conformance to norms or moral/ethical obligation (DiMaggio and Powell, 1983).

In Figure 4-1, at the international level, the publications of the revised GRI3 in 2006, GRI3.1 in 2011, GRI4 in 2013 and the introduction of IR in 2013 represent a form of normative institution in escalating the reporting of CSD of which CED is a component. Many companies across the world have used GRI as their reference guidelines for the reporting of CSD (Hahn and Lulfs, 2014).

In the Malaysian context, the normative institutions for CED emerge both from sustainability reporting awards by professional accounting bodies (detailed in Section 4.3.2.3) and from norms that build the culture of individuals and companies

(ACCA Malaysia, 2014; Amran and Haniffa, 2011). In regard to the former, Bebbington et al. (2012) documented that Environmental Accounting Awards instituted by the ACCA have encouraged the CED practices in the UK. This thesis proposes that the latter may arise from the interpretation, by companies and the top management (*Shari'ah*-compliant, Chairperson, CEO), of the values of the Islamic teachings that the top management practice, associated gender differences, and roles as institutional owners and directors (government institutional ownership, non-government institutional ownership, board size, board independence, women on boards), because the literature is not decisive on what informs the practices. Consistent with Delmas and Toffel (2004), industry membership can also contribute to normative institution when the majority of the members within the same industry practise the same CED behaviour.

4.4.3 Cultural-cognitive Institution

Cultural-cognitive arises from beliefs, norms and rules that comprises of symbols, cultural rules and frameworks in guiding behaviours (Hoffman, 1999; Scott, 2014). In defining the cultural-cognitive institution, DiMaggio and Powell (1983) contended that an organisation will emulate the actions of other organisations that it has perceived as legitimate due to uncertainty about the environment. In this sense, Hoffman (1999) insisted the interpretation of legitimacy is unquestionable because the organisation is so ingrained in this taken-for-granted perspective.

In the Malaysian context, the initiatives of the Malaysian Government in the maintaining both the ICM and SAC can also be seen as a type of cultural-cognitive institution that presumes Islamic accountability. In addition to that, aside from being viewed as normative institutions, the Islamic values and gender differences that are attached to the top management of companies based on their deep-rooted cultural beliefs and upbringing are a different form of cultural-cognitive institution. Similarly, government institutional ownership, non-government institutional ownership, board size, board independence, women on boards, company size and

industry membership can also be viewed as a cultural-cognitive institution. For example, industry membership is a cultural-cognitive institution on the basis that ESI (environmentally-sensitive industries) are more bound by the rules of CED than non-ESI (Brammer and Pavelin, 2008). Thus, companies that are situated within the ESI domain but either do not provide or provide less CED, will mimic other companies to claim their legitimacy.

Although all the abovementioned three institutions differ in their attributes, they interweave and thus it is difficult to segregate their effect (Scott, 2014). Despite this, at a particular point in time, one type of these three institutions can be dominant than others (Hoffman, 1999) and all are formulated to gain legitimacy, resources, stability and survival in difficult political and economic environments (Dillard et al., 2004; Meyer and Rowan, 1977).

Since CED is an evolving issue, the interaction of the political and economic environment, organisational field and individual organisation is complex and thus explains institutional dynamics. While institutional dynamics appreciate isomorphism in adopting CED reporting, they also recognise diffusion in changing perceptions about CED (Zeyen et al., 2016). DiMaggio and Powell (1983) asserted that as companies receive homogeneous institutional pressures from the field, they are expected to provide a homogeneous response to CED. However, Hoffman (1999) corrected the misconception of homogeneity and he (2001) claimed that individual organisation differs in its responses due to the heterogeneous attributes of its company-specific characteristics. To understand how individual organisation level respond to CED, the following section provides argument about how company-specific characteristics could influence CEDQty and CEDQ.

4.5 Development of Hypotheses

Following Hoffman (2001), the central thrust of this thesis is that institutional pressures for CED alone cannot completely account for organisational responses in terms of CEDQty and CEDQ. This thesis contends that a range of company-specific

characteristics may alter the institutional pressures of CED. The company-specific characteristics examined in this thesis are Islamic influence, corporate governance, financial performance and control variables.

Since each company can have multiple characteristics, the company's perception and interpretation of institutional pressures for CED, as well as decision-making and responses for CED can be modified by different company characteristics. In this context, the characteristics of Malaysian companies are explanatory variables that modify the relationship between institutional environment factors and reporting behaviour (CED).

Hypotheses regarding the influence of institutional changes and company-specific characteristics on CED is provided next.

4.5.1 Institutional Changes and Corporate Environmental Disclosure

Companies as business entities cannot operate in isolation (Rinaldi, 2019). Companies need to interact with their surrounding institutions including, but not limited to government, customers, suppliers, employees and communities to gain legitimacy, resources, stability and survival (Meyer and Rowan, 1977). Such interactions are recurring and changing over time due to changes in institutions and hence reflects the changes in institutional pressures.

Based on institutional theory, this thesis posits that the changing Malaysian institutional environment between 2006 and 2014 has created institutional pressures for CED among Malaysian companies. These pressures are derived from the changing international institutional environments in the field of CED. For instance, at the international level, Malaysia has made commitment in 2005, 2013 and 2014 to reduce carbon emission at specified level. Relating this, both the Global Reporting Initiative (GRI) and the International Integrated Reporting Council (IIRC) have become key players in creating international institutional pressures for CED and in shaping how companies report CED. This is evidenced when KPMG

(2005, p. 7) reported in 2005, 660 companies from 50 countries used GRI guidelines as their reference for sustainability reporting. The trend is increasing to 62% in 2008 and to 78% in 2013 (KPMG, 2008, p. 38, 2013, p. 12). This is because GRI guidelines contained more helpful guidance for sustainability reporting than the UNEP, Davis-Walling and Batterman, and Deloitte Touche Tohmatsu guidelines (Morhardt et al., 2002). Therefore, many researchers have constructed their CED index based on the GRI (Clarkson et al., 2008; Ho and Taylor, 2007; Michelon and Parbonetti, 2012). Findings on the use of GRI guidelines suggest that the GRI guidelines have reached a prominent level of influence on sustainability reporting.

The GRI, which was established since late 1990s, is a coalition of multi-stakeholder organisations with the aim to develop and produce sustainability reporting guidelines (KPMG et al., 2010). Similar to the GRI, the IIRC comprises a multi-stakeholder committee, formed in 2010, to develop an integrated framework for financial and non-financial reporting. This framework promotes the use of integrated reporting in helping both companies and investors to gain a holistic picture of a company (GRI, 2011a; KPMG, 2011).

To enhance understanding how the international institutional environment influence the Malaysian institutional environment between 2006 and 2014, it is imperative to divide the timeline of institutional changes into: 2006 to 2008, and 2008 to 2014.

Malaysia's first commitment to Kyoto Protocol of reducing carbon emission was made in 2002. Since then, Malaysia needs to monitor the commitment and one way of monitoring is by reporting. GRI guidelines that were published in 2000 provide a base for CER reporting. Between 2006 and 2008, the guidelines were revised in 2006 forming what is known as GRI3. It is argued that the Malaysian institutional environment perceived this changes as important in the field of CED, and therefore in 2006, BM has revised its *2006 BM MM Listing Requirements* and issued *2006 BM CSR Framework*. Both events mark the existence of regulative institutional pressures for CSD. In 2007, SCM has revised its code of corporate governance

forming what is known as *2007 MCCG*. During the same year, SAC has revised its bi-annual listing of *Shari'ah*-compliant companies. The events of SCM and SAC could be argued as forming regulative institutional pressures in the field of CED because companies are required to comply with specific requirement of governance and *Shari'ah* when making corporate disclosures. Meanwhile, the continuation of giving sustainability reporting awards by ACCA Malaysia and DOE Malaysia, together with MIA, MICPA and BM within this period could be argued relate to normative institutional pressures for CED.

Between 2008 and 2014, at the international institutional environment, Malaysia has renewed its commitment to Kyoto Protocol. Within this period, two revisions of GRI took place with the first revision known as GRI3.1 in 2011, and the latest GRI4 was published in 2013 (ACCA Malaysia, 2013). As for the IIRC, the first IR framework was introduced in 2013 (IIRC, 2013). Although newly introduced, KPMG reported that the uptake of IR was encouraging with six percent (top 100 companies) used it in 2015, compared to three percent in 2013 (KPMG, 2015, p. 38). This thesis argues that the events that occurred at the international institutional environment have prompted the Malaysian institutional environment to make the following changes in supporting CED. The events include Malaysia's policy response to global climate change through the issuance of *2009 National Policy on Climate Change* and *2009 National Policy on Green Technology*; introduction of the *Environmental Quality (Industrial Effluent) Regulations 2009* as a subsidiary law on *Malaysian Environmental Quality Act 1974* and the revised *Malaysian Environmental Quality Act 1974 (Amended 2012)*; the revised *2012 MCCG* by SCM; and the revised 2012 screening method for *Shari'ah* assessment by SAC which this thesis proposes symbolise regulative institutional pressures for CED. The additional sustainability reporting awards given to companies starting from 2009 by the professional accounting body (PwC Malaysia and other Malaysian agencies) can be symbolised as normative institutional pressures for CED.

It is further argued that the institutional pressures exerted by institutional constituents due to the Malaysian changing institutional environment between 2006

and 2008, and between 2008 and 2014 have influenced the CED practices of the Malaysian companies.

The majority of empirical evidence however, was limited to regulative pressures exerted by BM of the *2006 BM Listing Requirements* and *2006 BM CSR Framework* except in the study of Haji (2013a, 2013b). For example, Zainal et al. (2013) revealed that the both the BM coercive pressures had no impact on CSD except in the community disclosure. In contrast, although there was slow improvement, Othman et al. (2011), Haji (2013a, 2013b) and Hamid et al. (2015) find that these pressures had positively increased CED (and CSD). While the studies of Othman et al. and Hamid et al. attribute the increase in CED to the BM's regulative pressures, Haji's (2013a, 2013b) studies associate the upward trend of CSD with the joint effects of multiple institutional changes: BM regulative pressures; the Global Financial Crisis; the revised *2007 MCCG*; and the Prime Minister CSR Award. However, Haji's studies examined the period between 2006 and 2009. No studies have examined the later years' CED by Malaysian companies.

Based on the above discussion, the following hypotheses are formed:

- H1.1a: There is a significant difference in CEDQty in 2006 and 2008.
- H1.1b: There is a significant difference in CEDQty in 2008 and 2014.
- H1.1c: Institutional changes between 2006 and 2008 have a positive influence on CEDQty.
- H1.1d: Institutional changes between 2008 and 2014 influence CEDQty.
- H1.2a: There is a significant difference in CEDQ in 2006 and 2008.
- H1.2b: There is a significant difference in CEDQ in 2008 and 2014.
- H1.2c: Institutional changes between 2006 and 2008 have a positive influence on CEDQ.

H1.2d: Institutional changes between 2008 and 2014 influence CEDQ.

4.5.2 Islamic Influence and Corporate Environmental Disclosure

This thesis examines *Shari'ah*-compliant status, Muslim Chairperson and Muslim CEO as representation of Islamic influence variables.

4.5.2.1 *Shari'ah*-compliant status (SHA)

Article 3 of *Constitution Malaysia* prescribes that Malaysia is an Islamic country. In fulfilling the accountability to the *Shari'ah* as described in Islamic accountability, the Malaysian Government established ICM and SAC (see Section 4.3.2.6) as a mechanism for *Shari'ah* governance. Through the SAC, *Shari'ah*-compliant companies need to undergo stringent screening to maintain their status. The SAC uses company's report as one of the sources of information for the *Shari'ah* screening assessment. As companies are concerned about their *Shari'ah* status, they are expected to provide full disclosure of their *Shari'ah* practices, and that include the disclosure related to accountability to the environment (CED). Ultimately, it leads to accountability to God that explains Islamic accountability.

Islamic accountability posits that as Islamic accounting promotes full disclosure and that company reporting is used as a tool to discharge a company's accountability, *Shari'ah*-compliant companies should disclose their accountability to human beings and the environment in the corporate reports (Baydoun and Willet, 1997, 2000; Haniffa and Hudaib, 2007; Ousama and Hamid, 2010). By providing CED companies can demonstrate whether their practices are consistent with the Islamic values of justice and benevolence (Haji, 2013a).

Accountability to God by adhering to *Shari'ah* also aligns with the regulative institutional pressures in institutional theory. In addition to companies acknowledge submission to God as coercive pressures, the stringent monitoring of *Shari'ah*-compliant by the SCM and SAC are also regulative institutional pressures in that

when companies fail the screening processes they are automatically reclassified as non-*Shari'ah*-compliant status and excluded from the ICM. The extent to which companies with *Shari'ah*-compliant status are expected to report CED is also because of the norm of *Shari'ah*-compliant companies and the espoused Islamic values associated with the *Shari'ah*-compliant status.

Taking into consideration the strong theoretical arguments toward a positive relationship, the following hypotheses are established:

H2.1: *Shari'ah*-compliant status has a positive influence on CEDQty.

H2.2: *Shari'ah*-compliant status has a positive influence on CEDQ.

4.5.2.2 Muslim Chairperson and Muslim CEO (CHAIR and CEO)

A number of studies have indicated that the Chairperson of the board of directors and the CEO are two common representatives of top management (Brennan et al., 2009; Ferns et al., 2008; Hackston and Milne, 1996; Zhu and Westphal, 2014). Between the Chairperson and CEO, the *Malaysian Companies Act*, *MCCG* and *BM Listing Requirements* have emphasised that the ultimate responsibility of the Chairperson is leading the board while the CEO has power to make decisions on daily operations of a company and that power is subject to the control by the board of directors. In this vein, it is understood that the Chairperson position in decision making is at a higher level than the CEO. Nevertheless, in terms of operational aspect of a company, it seems that the CEO is more informed than the Chairperson (Bernard et al., 2018).

Mintzberg (1997) contended that as a business leader, top management (e.g., Chairperson, CEO, board of directors) is assuming three major roles: interpersonal, informational and decisional. The interpersonal roles of top management include the role of inculcating good values as corporate values (Waldman, de Luque, et al., 2006; Wu et al., 2015) and the values can transpire through corporate decisions. Hambrick and Mason (1984, p. 193) assert that decisions made by a Chairperson and CEO are a reflection of both their “values and cognitive bases” that they

possess. Echoing a similar view, Lewis et al. (2014) express that both of these “values and cognitive bases” form a foundation for choices of decision that the Chairperson and CEO make. While both of these are not easily observable because they involve complex processes, Manner (2010) suggested that researchers explore demographic and other observable attributes of Chairperson and CEO to examine how these attributes might influence CSD. Among the attributes are religion (in this section) and gender (Section 4.5.3.1).

According to Hemingway and MacLagan (2004), the personal values of top management can be developed from cultural contexts including religion because each religion upholds good values in nurturing good attitudes (Helfaya et al., 2018; Ramasamy et al., 2007). As religious values underpin the personal values of top managements, Hemingway and MacLagan (2004) argued that religious values can have greater influence on the decision for corporate sustainability. This is so because the decision to champion or participate in corporate sustainability is dependent upon the values of top managements (Marcus et al., 2015). Based on this, this thesis takes the position that Muslim Chairperson and Muslim CEO can influence CED.

Theoretically, when Muslim Chairpersons and CEOs have strong foundation of Islamic teachings, there is a logical inference that the group of Muslim Chairpersons and Muslim CEOs will on average have a high level Islamic values than the group of Chairpersons and CEOs who are not Muslims. They are expected to prioritise their decisions and actions according to the *Shari'ah*, one of which is the accountability to the environment. Thus, they are likely to support the decision to engage in environmental activities and hence provide full disclosure of such activities through CED. This explains Islamic accountability and also aligns with institutional theory, whereby the accountability to God in regard to accountability to the environment reflects coercive institutional pressures of the Islamic teachings. It can also be viewed as normative pressures due to the group norms of Islamic teachings that the Chairpersons and CEOs held, as well as cultural-cognitive pressures of espoused Islamic values based on individual upbringing. From the lens

of resource-based theory, Muslim Chairpersons and CEOs and the environment are resources to companies. Thus, when companies have a combination of the Muslim Chairpersons and Muslim CEOs, companies are expected to create dynamic capabilities that would support CED. This link potentially leads companies having competitive advantage in the future.

Given Islamic values are elements of Islamic religion and that Islamic accountability requires human beings (e.g., Chairperson and CEO) to uphold accountability to fellow humans and the environment (e.g., CED in this thesis) (Dusuki, 2008; Maali et al., 2006), it is necessary to describe how the Malay name is used to proxy for Islamic values of the Muslim Chairperson and Muslim CEO. This description exemplifies the institutionalisation of Islam at the national level and individual organisational level of decision-makers which aligns with institutional theory.

Article 60, *Constitution of Malaysia* defines a Malay as:

a person who professes the religion of Islam, habitually speaks the Malay language, conforms to Malays custom and-

(a) was, before Merdeka Day [Independence Day], born in the Federation [of Malaya or Malaysia] or in Singapore or born of parents one of whom was born in the Federation [of Malaya or Malaysia] or in Singapore, or was on that day domiciled in the Federation [of Malaya or Malaysia] or in Singapore; or

(b) is the issue of such a person.

Based on the above content of the *Constitution of Malaysia*, it can be interpreted that Islam is a religion of the Malay ethnic group. This is further buttressed by the role of the Malay Ruler as the Head of Islam for each state in Malaysia, as well as in Malaysia as a country (Bari, 2005; Choo-Beng, 2000).

As a multi-cultural country, the Malaysian Ministry of Home Affairs through the National Registration Department has set a guideline to differentiate Malay names from the rest of the major ethnic names in Malaysia. This naming convention is based on ethnic attributes, that is, ethnic identity and religion are recorded on birth certificate and national identification card (Choo-Beng, 2000). This labelling is useful in determining rights and privileges of the Malaysian community in accordance to the Constitution (Joseph, 2006). For example, Zeti Akhtar binti Aziz denotes a Malay name, Khoo Kay Kim denotes a Chinese name, Ramayyah a/l Thuraissamy denotes an Indian name, and Kanang a/k Langkau is an example of another indigenous ethnic. Based upon this naming convention, Haniffa and Cooke (2002) discovered that Malay directors had a significant positive effect on voluntary disclosure practices in Malaysia. They attributed the reason to the espoused Islamic values in Malay directors, which encourage transparent disclosure as a culture of business ethics, consistent with the study of Gambling and Karim (1986).

In line with this naming convention, this thesis will consider the fact of Islamic names in top managements as a representation of espoused Islamic values. The name convention is consistent with Islamic practice where Prophet Muhammad's real name is Muhammad bin Abdullah, his wife's name is Khadijah binti Khuwailid, whilst the names of his *companion*⁴¹ are Abu Bakr Abdallah bin Abi Quhafah as-Siddiq, Umar bin al-Khattab, Uthman bin Affan, and Ali bin Abi Talib. Muslim names are distinguishable by observing a linking name of 'bin' and 'binti' between the name of a person and his/her father. This linking name differentiates between a male and a female Muslim or Malay. For example, Ros Hasri bin Ahmad denotes a Malay male, and Siti Masnah binti Saringat denotes a Malay female. For converting, even though the Islamic law in Malaysia does not require a person whose original background is not Muslim to change name to a Muslim name, the *Sunnah or Hadith* (the deeds and sayings of Prophet Muhammad) suggests that the person should ensure that his/her original name carries a good meaning.

⁴¹*Companion* or *sahabi* is an Arabic word which means someone who saw the Prophet Muhammad S.A.W. and believed in him as well as died as a Muslim (*Qu'ran*, 2:137; 4:115; 9:100; 48:29; 98:8).

Accordingly, in general, many converted Muslims in Malaysia change their name to carry a good meaning, consistent with their faith. For example, Ridhuan Tee bin Abdullah⁴² and Mohd Farid Ravi bin Abdullah are identified as converted Muslims. Given the above arguments, thus it is reasonable to assume surrogate Malay names having an Islamic influence, thus denotes the associated Islamic values.

Empirical studies, however, lean more towards testing the link between religion and attitudes to CSR using the analysis of variance rather than the regression analysis. For example, Brammer et al (2007) found that from a comparison of nine religions with non-believers in a sample from 20 countries, only Buddhist practitioners had a higher preference for CSR than non-believers. Hindus, Muslims, and Other Christians had less preference for CSR than non-believers while there was no significant difference between Jewish, Roman Catholic, Russian Orthodox and Agnostic, and non-believers on the preference for CSR. Further, in regards to Muslims, they discovered that Muslims were supportive when companies engaged in social, poverty and charity activities, but not when companies engaged in environmental activities. In an earlier study, Angelidis and Ibrahim (2004) concluded that there was a slight difference in the ethical orientation between religious and non-religious university students. Using a regression analysis, Ramasamy et al. (2010) found that religiosity practices by consumer in Hong Kong and Singapore influenced CSR. The religiosity influence in Singapore was merely based on egotistical motives, whereas consumers in Hong Kong supported CSR because of both altruistic and egotistical reasons. However, no prior study has been conducted to link the Muslim Chairperson or Muslim CEO and both CEDQ_{ty} and CEDQ. Despite this, some studies have shown that when CEOs make decisions, their choices of decision are highly individualised, which derive from their values, personalities and experiences (Maak et al., 2016).

⁴² Ridhuan is an Arabic name that carry a meaning of mercifulness. In Islamic belief, it is the name of the angel of the gates of Heaven. Farid also is an Arabic name that carry a meaning of unique or precious. In general, many converted Muslims in Malaysia maintain part of their original names such as Tee and Ravi and use Abdullah as the universal name for their father because Abdullah is the name of Prophet Muhammad's father.

Given the strong theory in support of a positive relationship, the following hypotheses are formed:

H3.1: A Muslim Chairperson has a positive influence on CEDQty.

H3.2: A Muslim Chairperson has a positive influence on CEDQ.

H4.1: A Muslim CEO has a positive influence on CEDQty.

H4.2: A Muslim CEO has a positive influence on CEDQ.

4.5.3 Corporate Governance and Corporate Environmental Disclosure

The OECD (Organisation for Economic Co-operation and Development) describes corporate governance as “a set of relationships between a company’s management, its board, its shareholders and other stakeholders” (2004, p. 11). The OECD considers that corporate governance is important for three reasons. First, at a micro level, corporate governance provides a framework for companies to run their economic activities in a proper manner by outlining a structure of the company and how to achieve its objectives. Second, at a macro level, the existence of corporate governance increases economic efficiency and growth of the capital market. Third, corporate governance is critical in stimulating the capital market’s confidence by installing effective and efficient monitoring mechanisms within the company.

Based on this importance of corporate governance, past studies have divided corporate governance mechanisms into two: internal and external. Internal mechanisms include institutional ownership, board independence, board size, board meetings, types of committee on the board, ages of the board, women on the board, and CEO duality (Abeysekera, 2010; Farook et al., 2011; Giannarakis, 2014b; Liu and Subramaniam, 2013; Merkl-Davies and Brennan, 2007), whereas external mechanisms comprise strategic alliances, network membership, parent-subsidiary relationships and takeover vulnerability (Cremers and Nair, 2005; Filatotchev and Nakajima, 2010).

To execute a sound corporate governance system, the OECD has outlined six principles of good governance⁴³ in 2004. Similarly, the SCM outlined eight principles of good governance⁴⁴ in the revised *2012 Malaysian Code of Corporate Governance (MCCG)*. These changes reflect a conviction that disclosure plays a significant role in demonstrating sound corporate governance, specifically expressed through Principle 5 and Principle 7, respectively. Notably, both sets of principles acknowledge that one salient role of these principles is to lead an interplay between management, board, shareholders and stakeholders in upholding good governance practices. In this way, it may be seen that good corporate governance can offer a platform for both internal and external parties to act in the best interests of all.

Since a sound corporate governance emphasises corporate disclosures, this thesis examines the influence of internal corporate governance variables of Chairperson's gender, CEO's gender, government institutional ownership, non-government institutional ownership, board size, board independence and women on boards on CED.

4.5.3.1 Chairperson and CEO Gender

It has been identified earlier in this chapter (see Section 4.5.2.2) that Chairperson and CEO of a company assume responsibility for crucial decision-making for their company. Empirical evidence on the influence of gender of the Chairperson and/or CEO on CED in the context of developing countries, however, is limited despite the influence of gender has become prominent recently (Borghesi et al., 2014; Rao and Tilt, 2016; Zhang et al., 2013).

⁴³Six OECD principles of corporate governance are: 1) Ensuring the basis for an effective corporate governance framework; 2) The rights of shareholders and key ownership functions; 3) The equitable treatment of shareholders; 4) The role of stakeholder in corporate governance; 5) Disclosure and transparency; and 6) The responsibilities of the board (OECD, 2004).

⁴⁴Eight MCCG principles of corporate governance are: 1) Establish clear roles and responsibilities; 2) Strengthen composition; 3) Reinforce independence; 4) Foster commitment; 5) Uphold integrity in financial reporting; 6) Recognise and manage risks; 7) Ensure timely and high quality disclosure; and 8) Strengthen relationship between company and shareholders (SCM, 2012).

Prior studies have found that female CEOs are associated with risk-aversion characteristics when they make financial decisions (Farag and Mallin, 2018; Huang and Kisgen, 2013; Khan and Vieito, 2013). Conversely, both Adams and Funk (2012) and Berger et al. (2014) revealed that female directors are more risk-taking than their male counterparts. For CSR, companies are likely to invest in CSR activities and have proactive CSR performance when led by female CEOs (Borghesi et al., 2014; Huang, 2013; Manner, 2010). For example, both Manner (2010) and Huang (2013) discovered that companies in the US that led by female CEOs are positively related to proactive CSR performance. Huang (2013) concluded the positive relationship exists because female CEOs are more concerned about society than the male counterparts. Such concern are associated with the female values and belief systems arising from the individual upbringing and experience of the CEO which is consistent with the normative and cultural-cognitive aspect of institutional theory for differences between women and men.

In a different study, Borghessi et al. (2014) found that companies are more likely to invest in CSR when led by female CEOs. However, this gender difference diminishes when companies invest in environmental activities. Others suggest that this emphasis on CEO gender may be based on the premise that CEO is a key decision-maker of operational aspects in a company that formulates strategy for responding to CSR and eventually CSD (Bernard et al., 2018; Waldman, de Luque, et al., 2006; Waldman, Siegel, et al., 2006; Walls and Berrone, 2017). Based on this, this thesis argues that both Chairperson and CEO attributes have some impact on the way these leaders perceive and interpret institutional pressures for CED. This thesis further argues that the gender attribute of Chairpersons and CEOs could possibly influence how companies are responding to institutional pressures for CED. Since each company could has a different combination of Chairperson and CEO, this thesis explores the extent to which this uniqueness leads to heterogeneity of resources and may lead to different responds among companies. This thesis assumes that the imprint values and cognitive bases of the Chairperson and CEO based on gender can result to this heterogeneity, which in turn reflect their decision-making relating to CSR and CSD. This aligns with the resource-based theory.

Considering the above theoretical discussions and empirical findings that more towards supporting the positive influence of female CEO on CSR, this thesis predicts the following:

H5.1: Female Chairperson has a positive influence on CEDQty.

H5.2: Female Chairperson has a positive influence on CEDQ.

H6.1: Female CEO has a positive influence on CEDQty.

H6.2: Female CEO has a positive influence on CEDQ.

4.5.3.2 Government Institutional Ownership and Non-Government Institutional Ownership

Institutional investors refer to investment funds, pension funds, insurance companies, charities organisations and unit trusts which collect and supply funds to financial markets on behalf of their beneficiaries that include the public (Cox et al., 2004; Johnson and Greening, 1999; Lakhal, 2005). In the Malaysian context, MSWG and SCM (2014, p. 2) define institutional investors as asset owners (including pension funds, private retirement scheme providers, insurance companies, takaful⁴⁵ operators and investment trusts) and asset managers who hold equity holdings in Bursa Malaysia listed companies.

The Malaysian institutional owners comprise both the government and non-government (How et al., 2014). The government institutional ownership represents both federal and state government ownership, resulting from the 1971 NEP that acts as a mechanism in increasing Bumiputera corporate equity ownership (see Section 4.3.2). Although both types of government institutional ownership are subject to oversight by the Public Accounts Committee (2015), Hezri and Hasan (2004) argued that the separation of power between federal and state government

⁴⁵ Takaful is an Islamic insurance that fulfill the requirement of the *Shari'ah* through partnership, mobilisation of financial resources, and risk-sharing. It eliminates the elements of *riba* (interests) arising from *gharar* (unknown risk of insurance) that leads to *masyir* (gambling by means of insurance contract that promises a high return for small investment) (Cebeci, 2012; Lewis, 2001)

complicates federal government control over state government ownership. Thus, the MOF Malaysia commonly refers government institutional ownership as GLICs (government-linked investment companies) of the federal government (Malaysian Government, 2008, 2010b). There are seven GLICs, namely, MOF Inc.; Khazanah; LTAT; EPF; KWAP; LTH; and PNB (PCG, 2015). Since, there is no definition for institutional ownership other than the seven GLICs, therefore it can be assumed that the remaining institutional ownership are non-government institutional ownership.

To ensure that institutional owners exercise effective roles in monitoring sustainability activities of companies, MSWG and SCM through Principle 5 of Malaysian Code of Institutional Investors require institutional owners to make sustainability assessments for company (MSWG and SCM, 2014) and one way to assess is by requiring companies to make transparent disclosures. To fulfill such responsibility, institutional owners need to increase their awareness about sustainability issues, including the environment. The institutional pressures exerted by MSWG and SCM on institutional owners are aligned with regulative pressures of institutional theory. In turn, institutional owners have greater capacity to influence how companies respond to institutional pressures for CED. The capacity of institutional owners to positively influence CSD is evidenced in the study by Cotter and Najah (2012) in Australia.

As the government institutional ownership represents how the government protects public interest through companies, therefore it is expected that government institutional owners will face more pressures to provide CED, as opposed to non-government institutional owners. This thesis also posits that companies with government institutional ownership are likely to provide more CED because this would reflect the success rate in the implementation of government policies towards environmental protection. From the resource-based theory, both the government and non-government institutional ownership are resources to companies. When companies have either group of the institutional ownership or combination of both, it is expected that they can influence the decision for CED due to their monitoring function of companies' activities.

While there is no specific empirical evidence on the influence of non-government institutional ownership on CED, past studies have shown that there are inconclusive findings on the influence of institutional ownership or government institutional ownership on CSD. Along this line, some studies have found that companies with more total institutional ownership (Cotter and Najah, 2012; Iatridis, 2013; Jo and Harjoto, 2012; Rao et al., 2012) or government institutional ownership (Amran and Devi, 2008; Haji, 2013b, 2013a; Muttakin and Subramaniam, 2015; Ntim and Soobaroyen, 2013; Tagesson et al., 2009) are likely to have more CSD. However, other studies found no association between total institutional ownership (Haniffa and Cooke, 2002; Stanny and Ely, 2008) or government institutional ownership (Amran and Haniffa, 2011; Ghazali and Weetman, 2006; Haji and Ghazali, 2013a) and CSD.

Prior studies found a strong positive relationship between the government institutional ownership and CSD. However, the relationship between the non-government institutional ownership and CED is under studied, hence the direction of the relationship is two-way. The following hypotheses are formed:

- H7.1: The proportion of government institutional ownership has a positive influence on CEDQty.
- H7.2: The proportion of government institutional ownership has a positive influence on CEDQ.
- H8.1: The proportion of non-government institutional ownership influences CEDQty.
- H8.2: The proportion of non-government institutional ownership influences CEDQ.

4.5.3.3 Board Size

Many empirical studies on the effect of board size on CSD have yielded varying findings, however its effect on CED in Malaysia seems to be limited. Some

international studies have found that board size has a significant positive influence on both CSD and CED (Arena et al., 2015; Frias-Aceituno et al., 2013; Giannarakis et al., 2014; Liao et al., 2018). Others have found either negative or no association between board size and both CSD and CED (Cheng and Courtenay, 2006; Hussain et al., 2018; Kassins and Vafeas, 2002; Prado-Lorenzo and Garcia-Sanchez, 2010). In the Malaysian context, Buniamin et al. (2011), Said et al. (2013) and Haji (2013b) found that companies with large size board provide more disclosure, however, only Buniamin et al. (2011) examined CED, and the other two studies investigated CSD.

The board size is one of the key corporate governance that make decision for CED. The decision that directors make is based on how they perceive and interpret institutional pressures for CED. When the board size is large, companies have more experience, knowledge, and opinions derived from their directors (Giannarakis, 2014b; Johnson and Greening, 1999; de Villiers et al., 2011). This explains the input resources that companies have in that companies can capitalise on advice from their directors to make informed and valuable decisions concerning CED, and eventually provide more CED as their responses to institutional pressures. Alternatively, companies with large board size provide less CED because the lack of understanding of environmental issues and lack of consensus in decision-making for responding to institutional pressures for CED among the directors (Lipton and Lorsch, 1992). This is so because some directors may perceive environmental activities is costly but less important than economic activities (Kassins and Vafeas, 2002).

Given the contradictory findings of past research, the following hypotheses are formulated:

H9.1: Board size influences CEDQty.

H9.2: Board size influences CEDQ.

4.5.3.4 Board Independence

Board independence has been identified as a factor influencing CSD. However, the findings are mixed. Some studies found board independence positively associated with CSD (Muttakin and Subramaniam, 2015; Ntim and Soobaroyen, 2013; Post et al., 2011), while others found board independence are negatively associated with CSD (Brammer and Pavelin, 2008; Esa and Ghazali, 2012) or have no association with CSD (Amran, Lee, et al., 2014; Ben-Amar et al., 2017; Giannarakis, 2014a). In Malaysia, researchers either found negative (Eng and Mak, 2003; Esa and Ghazali, 2012; Haniffa and Cooke, 2005; Sundarasan et al., 2016) or insignificant (Ghazali and Weetman, 2006; Haji, 2013a, 2013b; Haniffa and Cooke, 2002; Said et al., 2009) association between board independence and CSD. No studies based in Malaysia have found a positive association between both variables.

García-Meca and Sánchez-Ballesta (2010) undertook a meta-analysis study on the association between board independence and voluntary disclosures. They concluded that the mixed findings are resulted from differences in the regulatory definition of board independence at the country level and this will determine the measurement of board independence used in specific studies. Regarding the country contextual factor, they found that Communitarian countries (e.g., Sweden, Germany) are likely to have a positive association between board independence and voluntary disclosures, while no association between board independence and voluntary disclosures in the Anglo-Saxon and Asian countries.

The board of directors is considered independent when its composition consists of non-executive and/or independent directors. Non-executive directors are those who are not involved in the daily management of companies, but only play the oversight roles of executive directors (KPMG Malaysia, 2013). These directors can be either independent or non-independent. Independent directors are outside directors who are appointed as board members, whereas non-independent directors are those who sit on the board but have personal and/or professional interests with the company,

for example, through director ownership or relationship with the executive directors (Brammer et al., 2009; Rupley et al., 2012).

In Malaysia, the board independence is reinforced in *MCCG* and theoretically, the existence of independent directors improves efficacy of the board. Companies with more independent directors are likely to have greater capacity to influence the board's decision in matters pertaining to the society's interest (Ducassy and Montandrau, 2015). The greater the number of independent directors, the more expertise that a company has for monitoring and controlling the actions of executive directors (Jensen and Meckling, 1976). This is so because when exercising their monitoring roles, independent directors would take a holistic view of a company's performance, and not focusing only on financial measures and benefits. Therefore, when they interpret institutional pressures for CED, they are likely to influence decision that protect the interests of multi-stakeholder groups, that is by supporting companies' commitment to the environment through providing CED. By doing so, independent directors are regarded as honouring the society's interest and maintaining their own professional reputation (Muttakin and Subramaniam, 2015).

However, some researchers (Amran, Lee, et al., 2014; Haniffa and Cooke, 2005) contend that as CED is an evolving issue, having more independent directors may not always lead to higher CED, on the contrary, it may result in less CED. This is because although those independent directors may afford more expertise to companies, they may not possess the resources related to CED, or some may have less sustainable concerns on the environment due to the lack of understanding of CED issues relevant to the companies' operation.

Given the conflicting arguments and the mixed empirical findings about the relationship between independent directors and CED, the following hypotheses are formed, informed by institutional and resource-based theories.

H10.1: The proportion of independent directors influences CEDQty.

H10.2: The proportion of independent directors influences CEDQ.

4.5.3.5 Women on Boards

There are inconsistent findings on the influence of women on boards on CSD. While some multi-countries studies (Frias-Aceituno et al., 2013; Setó-Pamies, 2015) and in Malaysia (Sundarassen et al., 2016) have found that women on boards relate positively to CSD, findings in developed countries and other developing countries are rather mixed. For example, based in the US (Bear et al., 2010; Cook and Glass, 2018; Williams, 2003; Zhang et al., 2013), the UK (Liao et al., 2015), Canada (Ben-Amar et al., 2017), and Kenya (Barako and Brown, 2008), these studies found that CSD is affected by the presence of women on the boards. However, other multi-countries studies (Amran, Periasamy, et al., 2014; Glass et al., 2016; Prado-Lorenzo and Garcia-Sanchez, 2010) and in Australia (Galbreath, 2011) discovered no association between women on boards and CSD.

From an institutional theory perspective, women and men are different in terms of normative and cultural-cognitive aspects. Women and men are different in their agentic and communal attributes (Eagly and Johannesen-Schmidt, 2001). As opposed to men that are characterized by agentic attributes of assertiveness and competitiveness, women are typified by communal attributes of society concern including to the environment (Bossuyt and van Kenhove, 2018; Eagly and Johannesen - Schmidt, 2001). Women and men are also different in their gender-based functional differences and gender discrimination (Cook and Glass, 2018). For example, to advance into leadership roles, female directors need to have strong educational credentials to compete with male directors. Because of such competition, female directors are normally associated with community organisations. They also tend to face greater scrutiny and bias in advancing for leadership roles. Therefore, they are exposed to more gender discrimination than male directors. As a result, the presence of women on boards are likely to make decisions that support the provision of more CED due to their stronger communal attributes of environmental concern (Setó-Pamies, 2015), strong educational credentials and greater exposure to community organisations including those associated with the environment, and greater exposure to bias and discrimination

that lead them to promote fairness and equity and transparency (Barako and Brown, 2008). Meanwhile, the normative aspect of institutional theory posits that women and men have their own norms since they are of different group (Scott, 2014). Therefore, their behaviour related to CED will accordingly follow the group norms whether more or less support for CED.

Likewise, differences between women and men align with the resource-based theory, whereby the presence of women on boards increase board diversity (Liao et al., 2015). Since women and men have different learning and socialisation processes, the presence of women on boards of directors offers unique resources to companies by offering different networks than the male directors (Bear et al., 2010). Through the wider networks, companies can obtain and exchange information that would be valuable in decision making, particularly on CED. Eventually, female directors can influence decision making for CED in both positive and negative ways, depending how the network perceive and interpret institutional pressures for CED.

Given the presence of women on boards in Malaysia is still low (7.5% in 2009, 8.4% in 2011, and 9.1% in 2014) (MSWG, 2012, 2014) and limited empirical evidence on the influence of women on boards in Malaysia, this thesis takes a conservative position in forming the hypotheses:

H11.1: The proportion of women on boards of directors influence CEDQty.

H11.2: The proportion of women on boards of directors influences CEDQ.

4.5.4 Financial Performance and Corporate Environmental Disclosure

4.5.4.1 Profitability

There is no clear consensus on the relationship between profitability and CED in the literature. While some studies showed that higher profitability leads to increase in CSD (Khlif, Hussainey, et al., 2015; Muttakin and Subramaniam, 2015; Setó-Pamies, 2015), there are studies that suggest higher profitability decreases CSD (Ho and Taylor, 2007) or has no impact on CSD (Aerts and Cormier, 2009; Ben-Amar et al., 2017). The studies based in Malaysia also revealed a contrasting result of either positive (Haniffa and Cooke, 2002; Sundarasan et al., 2016) or no association between profitability and CSD (Haji and Ghazali, 2013a; Rahman et al., 2011; Sulaiman et al., 2014). Thus, it is worthwhile to revisit the impact of profitability on CEDQty and CEDQ in Malaysia.

Theoretically, companies are subject to institutional pressures from institutional constituents. These constituents expect that companies allocate some of their profits to sustainable activities. Companies with high profitability have more resources to support sustainable activities than low profitability companies. They are also more exposed to more public scrutiny (Khlif, Hussainey, et al., 2015). Consequently, they provide more CED to gain and maintain legitimacy of their operation, and hence secure the support of institutional constituents and the stability of their resources. In contrast, companies with low profitability reduce their ability to withstand institutional pressures for CED. Therefore, these companies have more focus on activities related to economic viability than CED because they do not have the resources to support CED (Roberts, 1992; Ullmann, 1985). Therefore, the following hypotheses are formed:

H12.1: Profitability influences CEDQty.

H12.2: Profitability influences CEDQ.

4.5.4.2 Leverage

Prior studies reveal mixed findings about the association between leverage and CSD. Some studies have reported that highly leverage companies provide more CSD because such disclosure facilitates debtholders in assessing the ability of companies to meet their debt obligations (Clarkson et al., 2008; Garcia-Sanchez et al., 2011; Liao et al., 2015). Other studies found highly leverage companies provide less CSD because these companies would have less resources for discretionary activities like CSD (Brammer and Pavelin, 2006a; Branco and Rodrigues, 2008; Cormier et al., 2011; Sulaiman et al., 2014). There are also studies that found no association between leverage and CSD (Clarkson, Overell, et al., 2011; Eljido-Ten, 2004; Prado-Lorenzo, Rodríguez-Domínguez, et al., 2009).

This thesis posits that leverage can be associated with disclosure of environmental information in two ways. On the one hand, institutional constituents from banking and creditor institutions are likely to exercise stringent monitoring on companies with more debt. Due to this, highly leveraged companies perceive providing CED is important to secure the loans and satisfy the demands for information from financial institutional constituents (Clarkson et al., 2008). On the other hand, highly leveraged companies may provide less CED because they have constraints in available resources for sustainability activities (Brammer and Pavelin, 2006a). Therefore, the following hypotheses are formed:

H13.1: Leverage influences CEDQty.

H13.2: Leverage influences CEDQ.

4.5.5 Control Variables

4.5.5.1 Company Size

There are abundant evidence on the positive association between company size and CED (and CSD) (Andrikopoulos and Kriklani, 2013; Brammer and Pavelin, 2006a;

Dias et al., 2017; Dienes et al., 2016; Liu and Anbumozhi, 2009; Santos et al., 2019). It is argued that larger companies tend to face more intense institutional pressures than smaller companies due to their visibility. This arises because larger companies interact with more multiple constituencies than smaller companies. Thus, their visibility of economic contribution are more than smaller companies. Larger companies also can afford more resources than smaller companies and therefore they are able to provide CED (Branco and Rodrigues, 2008; Rupley et al., 2012). Therefore, this thesis includes company size as one of control variables.

4.5.5.2 Industry

Findings of previous studies suggest that industry membership influences the variation in CED practices. Evidence showed that companies in environmentally-sensitive industries such as the energy and materials industries are likely to provide more CED than non-environmentally-sensitive industries (Bachoo et al., 2013; Brammer and Pavelin, 2006a; Cormier and Magnan, 2015; Liao et al., 2015; Rao et al., 2012; Yongvanich and Guthrie, 2005). Differences in the CED practices among industries are attributed to the unique characteristics of potential growth, competition levels, inherent environmental impact, the visibility of social and environmental risks, and the degree and type of regulatory intervention in each industry (Brammer and Pavelin, 2006a; Cho et al., 2014; Kolk and Perego, 2010). Given the unique characteristics of each industry, this thesis includes industry membership as a control variable.

4.6 Operational Models

The conceptual framework (see Section 4.2) theorises that companies need to respond to the converging institutional pressures of CED reporting at international and domestic levels. However, it is unlikely that all companies respond in the same way, given that they have company-specific characteristics (see Section 4.5), which are heterogeneous. To empirically test the conceptual framework proposed in this

thesis, two general models will be employed: a model for an aggregate CED item, and a model for an individual CED item.

4.6.1 Model for an Aggregate CED Item

Model 1 represents an aggregate reporting behavior of all companies by using the same set of explanatory variables to explain CEDQty and CEDQ. In formulating Model 1, based on the conceptual framework in Figure 4-1, it is assumed that CEDQty or CEDQ is an outcome or responses from companies on both the functions of institutional pressures imposed on them by the international and Malaysian institutions (denoted as Institutional Changes_{*t*}), and company-specific characteristics (denoted as Company-specific Characteristics_{*jt*}).

In Model 1, since CED is an issue-based field, theoretically, all companies in the field face homogeneous institutional pressures for CED in period *t*. Therefore, institutional pressures are constant across all companies in a given year. However, they change over time and hence, while having a constant effect in a given year, that effect changes over time. In any given year, this part of the model is just a constant. When different years are included in the model, what is modelled is changes in this constant over time relative to the selected base year. For company-specific characteristics, they are unique for each company in a given period. Therefore, the way companies respond to the reporting of CEDQty and CEDQ could possibly be either the same or different, across companies and over time, although they may still encounter the same pressures at a given point of time *t*. Accordingly, this will lead to variation across companies and over time due to differences resulting from institutional pressures for CED, company-specific characteristics, and unobserved variables by company *j* at time *t* (denoted as ε_{jt}).

Based on the framework in Figure 4-1, these company-specific characteristics include Islamic influence, corporate governance, financial performance and control variables. Each of this group contains specific attributes, which formulate Model 1.1. Thus, the expanded Model 1.1 is used as the empirical model in this thesis.

Model 1:CEDQty_{jt} or CEDQ_{jt}

$$= f(\text{Institutional Changes}_t) \\ + f(\text{Company – specific Characteristics}_{jt}) + \varepsilon_{jt}$$

Model 1.1:CEDQty_{jt} or CEDQ_{jt}

$$= \beta_0 + \sum_{i=1}^2 \beta_{0+i}(Y_t) + [\beta_3(\text{SHA}_{jt}) + \beta_4(\text{CHAIR}_{jt}) \\ + \beta_5(\text{CEO}_{jt})] + [\beta_6(\text{CHAIRG}_{jt}) + \beta_7(\text{CEOG}_{jt}) + \beta_8(\text{GOVT}_{jt}) \\ + \beta_9(\text{XGOVT}_{jt}) + \beta_{10}(\text{BS}_{jt}) + \beta_{11}(\text{ID}_{jt}) + \beta_{12}(\text{WOB}_{jt})] \\ + [\beta_{13}(\text{PRT}_{jt}) + \beta_{14}(\text{LEV}_{jt})] + [\beta_{15}(\text{SIZE}_{jt}) \\ + \sum_{i=1}^2 \beta_{15+i}(\text{IND}_{jt})] + \varepsilon_{jt}$$

Where:

$CEDQty_{jt}$	=	Corporate environmental disclosure quantity of company j at time t
$CEDQ_{jt}$	=	Corporate environmental disclosure quality of company j at time t
β_0	=	The intercept
$\beta_{1 \text{ to } 17}$	=	The coefficient of independent variables

Institutional Changes

Y_t	=	International and domestic political and economic institutional pressures at time t
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Islamic Influence

SHA_{jt}	=	<i>Shari'ah</i> -compliant status of company j at time t
$CHAIR_{jt}$	=	Muslim Chairperson of company j at time t
CEO_{jt}	=	Muslim CEO of company j at time t

Corporate Governance

$CHAIRG_{jt}$	=	Female Chairperson of company j at time t
$CEOG_{jt}$	=	Female CEO of company j at time t
$GOVT_{jt}$	=	The proportion of government institutional ownership of company j at time t
$XGOVT_{jt}$	=	The proportion of non-government institutional ownership of company j at time t
BS_{jt}	=	Board size of company j at time t
ID_{jt}	=	The proportion of independent board members of company j at time t
WOB_{jt}	=	The proportion of women on boards of company j at time t

Financial Performance

PRT_{jt}	=	Profitability of company j at time t
LEV_{jt}	=	Leverage of company j at time t

Control Variable

$SIZE_{jt}$	=	Size of company j at time t
IND_{jt}	=	Industry sector membership of company j at time t

Residual Term

ε_{jt}	=	Subject-specific components (μ_{jt}) and the remainder effects (v_{jt})
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The definition and measurement of each variable in the abovementioned model are further discussed in Chapter 5.

4.6.2 Model for an Individual CED Item

Model 2 represents the propensity to report for each CED item in the log form.

Model 2:

$$PTR_{jt} = \log \left(\frac{P_{jt}}{1 - P_{jt}} \right)$$

Where:

PTR_{jt} = represents propensity of company j to report a specific CED item at time t

P_{jt} = represents the probability of company j will report at time t

Model 2.1 extends the original model. It is on the assumption that companies will report a specific item following the institutional pressures for CED surrounding them at both the international and Malaysian levels (denoted as Institutional Changes _{t}), and company-specific characteristics (denoted as Company-specific characteristics _{jt}).

Replicating Model 1, institutional pressures for CED are assumed to have a homogeneous effect in a period t . Hence, they are constant across all companies in a given year. Nevertheless, they change over time and thus, while having a constant effect in a given year, that effect changes over time. When different years are included in the model, accordingly, the institutional pressures measure the change in this constant over time. Company-specific characteristics are assumed to be heterogeneous across companies and in a given period. These characteristics also change over time. Thus, although all companies have the same pressures at a given point of time t , the propensity to report each CED item could possibly be either the same or different across companies at the same time and over time.

Model 2.1:

$$\begin{aligned} \text{PTR}_{jt} &= f(\text{Institutional Changes}_t) \\ &+ f(\text{Company – specific Characteristics}_{jt}) + \varepsilon_{jt} \end{aligned}$$

Model 2.2:

$$\begin{aligned} \text{PTR}_{jt} &= \beta_0 + \sum_{i=1}^2 \beta_{0+i}(Y_t) + [\beta_3(\text{SHA}_{jt}) + \beta_4(\text{CHAIR}_{jt}) \\ &+ \beta_5(\text{CEO}_{jt})] + [\beta_6(\text{CHAIRG}_{jt}) + \beta_7(\text{CEOG}_{jt}) + \beta_8(\text{GOVT}_{jt}) \\ &+ \beta_9(\text{XGOVT}_{jt}) + \beta_{10}(\text{BS}_{jt}) + \beta_{11}(\text{ID}_{jt}) + \beta_{12}(\text{WOB}_{jt})] \\ &+ [\beta_{13}(\text{PRT}_{jt}) + \beta_{14}(\text{LEV}_{jt})] + [\beta_{15}(\text{SIZE}_{jt}) \\ &+ \sum_{i=1}^2 \beta_{15+i}(\text{IND}_{jt})] + \varepsilon_{jt} \end{aligned}$$

4.7 Summary

This chapter builds the conceptual framework of this thesis by integrating the Islamic accountability and resource-based theories into institutional theory that is central in guiding this research design and analysis. Anchoring on institutional theory, this framework presents in-depth discussions of the institutional setting in Malaysia, covering various literature, including on history, politics, Islam and corporate governance, to assist understanding on the changing pattern of the CEDQty and CEDQ. Based upon this framework, this chapter develops a set of hypotheses related to the influence of institutional changes, Islamic influence, corporate governance and financial performance on both the CEDQty and CEDQ practices in Malaysia. Finally, this chapter provides two operational models, comprising a model for an aggregate CEDQty and CEDQ, and a model for an individual CED item, as the empirical models for testing the framework of this thesis. Chapter 5 will justify the research methodology employed in this thesis.

CHAPTER 5:

RESEARCH METHODOLOGY

5.1 Overview

Chapter 3 argues that, in general, the research instruments for content analyses of CED in Malaysia are based on Western studies, and very few have captured the Malaysian context of environmental reporting. Within this limited scope, even though some have cross-checked against the government pronouncements, what is lacking is a research instrument that integrates Malaysian policies, legislation and guidelines comprehensively in relation to corporate environmental reporting, with international reporting guidelines to measure CED.

In light of the above, the current chapter explains the methodology adopted in this thesis in answering the stated research questions in Chapter 1. These research questions are developed based on a positivistic paradigm which considers the world as objective and that researchers are external to the world. According to Collis and Hussey (2003, p. 52), this paradigm is deemed to be suitable when the causes and results of a social phenomena need to be investigated. Therefore, this approach is appropriate in assisting the understanding of CEDQty and CEDQ reporting practices in the Malaysian institutional environment by providing the empirical analysis of the theoretical framework presented in Chapter 4.

Section 5.2 presents the sample selection that is based on three ESI of publicly-listed companies of BM. Section 5.3 provides justification for the use of both ARs and SRs as sources of CEDQty and CEDQ data in examining the pattern of CEDQty and CEDQ practices by Malaysian companies in the reporting years of 2006, 2008 and 2014, and over time. The utilisation of both reports addresses the lack of

existing Malaysian studies in considering these mediums of reporting for CED, despite an increasing importance of sustainability reports (KPMG, 2015).

The subsequent Section 5.4 presents the data collection procedures in a content analysis context by explaining the research instrument (CED index), followed by the validity and reliability of the CED index, coding process and reliability of a coding process. In the research instrument, this thesis reviews three international guidelines related to environmental disclosures to develop the CED index. This thesis also reviews ten Malaysian pronouncements comprising three policies, a group of environmental legislation and six guidelines, all related directly or indirectly to environmental disclosures, published by different government agencies in Malaysia. This review of different sources of international and Malaysian documents is essential to capture the CED index that is comprehensive and suits the Malaysian institutional environment and theoretical framework of this thesis. Moreover, this CED index permits an innovative approach to CED research as it combines the examination of both CEDQty and CEDQ, which are based on mechanistic and interpretative content analysis, respectively. Although studies on CED practices started back in the 1970s, only recently have scholars been attracted to doing research that combines both practices (Chapter 3). The CED index is then validated for face and construct validity. In this construct validity, the reliability of the CED index is achieved by developing well-specified dimensions and scoring rules in accordance with the Malaysian context. In ensuring the construct validity of the CED index and reliability of the coding process, this research performs both the intra-coder and inter-coder reliability. While the former is conducted by re-coding 10.9 percent of the sample reports by the researcher, the latter is accomplished by engaging two additional coders to re-code 9.7 percent of the sample reports.

Section 5.5 provides the definition and measurement of all variables used in this thesis. In addition, this section offers an alternative measurement for specific variables to assess the robustness of the models (Section 4.6). This is then followed

by a discussion of the statistical methods appropriate for this thesis in Section 5.6. The final Section 5.7 summarises the chapter.

5.2 Sample Selection

This thesis draws on a population of three Global Industry Classification Standards (GICS) sectors of publicly-listed companies in the Main Market of Bursa Malaysia as at 31 December 2014. Bursa Malaysia (BM) is the Malaysian Stock Exchange. This capital market is used as the context of this thesis because the corporate environmental disclosure quantity (CEDQty) and quality (CEDQ) in emerging economies, particularly in Malaysia, are still understudied (Othman et al., 2011).

BM classifies the capital market into two categories, namely the Main Market (first board) and the Ace Market (second board). The Main Market or MM differs from the Ace Market in that it offers a platform for companies to raise funds, whereas the Ace Market offers conducive growth prospects for all companies that are sponsor-driven. (Bursa Malaysia, 2015b, 2015c; SCM, 2013c). Although these two markets require companies to meet almost similar quantitative and qualitative listing criteria prior to and during the listing period, the *BM Main Market Listing Requirements* are more stringent than the *BM Ace Market Listing Requirements*.

More specifically, the quantitative aspect in those listing requirements contains four criteria that need to be met for each market category. The first criteria, is satisfying either one of three tests (profit test, market capitalisation test, and infrastructure project corporation test). Details of these tests are provided in the subsequent paragraph. The second, is meeting the minimum Initial Public Offering (IPO) price. In view of this, the Main Market requires companies to have a minimum share price at RM0.50 each, while there is no minimum requirement in the Ace Market. The third, is meeting the minimum requirement of public spread. In regard to this, the Main Market requires companies to have at least 25% share capital owned by public or unit holders, and a minimum of 1,000 public shareholders holding not less than 100 shares each. While the former requirement is the same for the Ace Market, the

latter requires companies in the Ace Market to have a minimum of 200 public shareholders holding not less than 100 shares each. Finally, the last criteria, is fulfilling the Bumiputera equity requirement. While the Main Market commands companies to allocate 50% of the public spread requirement to Bumiputera investors on a best effort basis, there is no requirement upon initial listing in the Ace Market. However, after five years being listed, companies in the Ace Market are required to allocate 12.5% of their paid-up share capital to Bumiputera investors.

The requirement for each of the tests in regard to the first quantitative criteria are as follows. The Main Market listed companies are deemed to fulfill the profit test if they have an uninterrupted aggregate after-tax profit of not less than RM20 million for a period of three to five years prior to listing, and an after-tax-profit of at least RM6 million for the most recent financial year. For the market capitalisation test, the Main Market listed companies are required to have a total market capitalisation of at least RM500 million upon listing, and incorporated and generated operating revenue for at least one full financial year prior to listing submission. In respect of the infrastructure project test, the Main Market listed companies must have the right to construct and operate infrastructure projects in or outside Malaysia with project costs of not less than RM500 million, and the concession or licence must have been awarded by a government or state agency with a remaining concession or licence period of at least 15 years. In comparison, Ace Market listed companies are not required to have minimum operating track records or profit for profit tests, while both market capitalisation and infrastructure tests are not applicable for them.

With regard to the qualitative listing criteria, there are five criteria for the Main Market and six criteria for the Ace Market. The five similar criteria are: first, core business; second, management continuity and capability; third, financial position and liquidity; fourth, look-up period; and last, transaction with related parties. The different requirement for the Ace Market is sponsorship, in which sponsors are

engaged to assess suitability for listing, and sponsors need to remain with companies for at least three years after listing.

The above approach is similar to other capital markets, for example, the Singapore Stock Exchange, and Australia Stock Exchange, which require companies to fulfil certain criteria prior to listing and maintain the current listing status (ASX, n.d.; SGX, n.d.). Thus, the ability of a company to be listed on the capital exchange market denotes that a company is large in size, and any matters pertaining to the company are more visible to the public than in a private company. Owing to this visibility, this thesis selects companies listed in the Main Market of BM because it is argued that the propensity for reporting CED is higher for larger companies as they are subjected to regulatory pressures, for example, from the stock exchange (Freedman and Jaggi, 2005, 2011).

In classifying companies according to the industry sector, CED researchers have referred to GICS (Clarkson, Overell, et al., 2011), Standard Industrial Classification (SIC) (Clarkson et al., 2008), Standard and Poor (S&P) (Aerts and Cormier, 2009), and country-specific sector classification (Brammer and Pavelin, 2006a; Sulaiman et al., 2014). Notably, the GICS and the BM industry classifications are different. While other Malaysian CED studies refer to the BM industry classification (Haji, 2013a; e.g. Haji and Ghazali, 2013a), this thesis refers to the GICS classification issued by MSCI Barra and S&P that classify businesses into ten sectors. This selection enables a comparison of the result to be made with the existing literature in other countries (Brammer and Pavelin, 2006a; Clarkson et al., 2011).

Based on the GICS classification, three sectors are selected for this thesis. They are utilities, energy and materials. This selection is informed by previous literature that considers these three sectors as ESI (e.g. Branco and Rodrigues, 2006; Cho et al., 2014). Hence, companies in these sectors are expected to provide CED as a means for managing their stakeholders. Moreover, the oil and gas industry that is included in the utilities and energy sectors is one of the twelve National Key Economic Areas (NKEAs) in the Malaysian Government Economic Transformation Programme

(Malaysian Government, n.d.). Under this programme, these sectors are expected to contribute to 20% of the Malaysian Gross Domestic Product (GDP) by the year 2020. Therefore, a close examination of these sectors allows further understanding of their behaviour in relation to CED.

The research commences in the year 2014. As at 31 December 2014, the total population of companies in the utilities, energy and material sectors of the Main Market of BM was 173. However, after removing three companies that are listed on or after 1 January 2014, an initial sample of 170 companies is gathered in this thesis (Table 5-1). This exclusion is made to enable the examination of 2014 company reports. As there is a lag period between the financial year-end and publication of company reports (maximum six months), the year 2014 is the latest reporting year available for this thesis. Additionally, 35 companies were further excluded from the list to enable the examination on the impact of institutional changes at international and country levels between 2006 and 2014 on CED reporting in Malaysia across the same companies. Furthermore, existing studies of CED in Malaysia reveal that the most recent company reports under examination were 2011 (see Iatridis, 2013), while the latest research (e.g. Hamid et al., 2015) shows that they examine company reports for 2006 and 2009. Thus, this thesis contributes to informing the current literature by providing more current CED data.

The final sample for this thesis is 135 companies in the Main Market after excluding companies without company reports for the year 2006 and 2008 (see Table 5-1). The list of selected companies is exhibited in Appendix 2. These two year periods are selected because during the year 2007, the CSD was mandatory through the amended *2006 BM MM Listing Requirements* (Bursa Malaysia, 2006c), following the issuance of *BM CSR Framework* in 2006. Although mandatory, it is a vague statement because Paragraph 29, Part A, Appendix C of the *2006 BM MM Listing Requirements* only mentioned briefly that companies are required to provide the following in their annual reports :

a description of the corporate social responsibility activities or practices undertaken by the listed issuer and its subsidiaries or if there are none, a statement to that effect. (p. App 9C-6)

Despite this requirement specifying that companies should furnish CSD through a particular reporting medium, it is not a fully prescription requirement, similar to the ambiguous requirement of the Australian mandatory environmental reporting guidelines identified in the study by Frost (2007). This is because even though this requirement refers to the *2006 BM CSR Framework* in specifying four CSR areas of disclosures: marketplace, workplace, community and environment (Bursa Malaysia, 2006a), this framework is silent on whether a company should have all the four areas of disclosures or a statement on the absence of each area of disclosures in a particular reporting year. Hence, this leaves it to the discretion of companies in reporting CSR information. Such discretion highlights the inadequacy of both the *2006 BM MM Listing Requirements* and *2006 BM CSR Framework* in guiding the reporting of CSD because these documents were not comprehensive in detailing the format, content of specific disclosure items in the four areas and amount of such disclosures (Sulaiman et al., 2014). As such, this vague statement in both the *2006 BM MM Listing Requirements* and *2006 BM CSR Framework* has contributed to limited CSR information, particularly the environmental information, which is the interest of this thesis.

In addition, while enacting that CSD is mandatory through the *2006 BM MM Listing Requirements* to encourage such disclosures, the enforcement mechanisms for monitoring this mandatory compliance is not implemented. Thereby, this leads to a restricted mandatory requirement. However, it is interesting to note how the sample Malaysian companies have interpreted the absence of such monitoring enforcement in their CED practices.

As discussed in Chapter 4, BM and Companies Commission of Malaysia (CCM) issued follow-up guidelines on CSD content, namely: (1) *Powering Business Sustainability: A Guide for Directors* in 2010; (2) *Best Business Practice Circular*

5/2013 entitled *Corporate Responsibility: Guidance to Disclosure and Reporting* in 2013; (3) revised *BM Sustainability Reporting Guide* in 2015; and (4) *A Toolkit to Implement Green Business* in 2015. However, there is a question as to whether these guidelines, especially those issued between 2009 and 2013, assist in improvement of CED in company reports up to 2014, because the latest Malaysian company reports investigated were up to 2011 (see Iatridis, 2013). Despite this, such study did not examine the impact of Malaysian pronouncements on the CED behaviours. This gives indication that there is a need to carry out a study that integrates the relevant Malaysian pronouncements in relation to environmental disclosure in a comprehensive and updated manner.

Added to the above, at the Malaysian level, the *Malaysian Code of Corporate Governance (MCCG)* was revised in 2007, with one of the principal highlights on the importance of timely and quality disclosure. Connecting the principle of *MCCG* with CED, this implies that Malaysian companies are subject to reporting CED that follows the principle of timely and quality disclosure. Therefore, the examination of year 2006 and 2008, as well as 2014, is in part an event study. The comparison between 2006 and 2008 allows examination of the degree of changes in CED as a result of the Malaysian institutional reforms and pressures at international level. Similarly, the comparison between the years 2008 and 2014 is made because, as argued in Chapter 4, institutional theory states that institutional changes require time and do not take immediate effect. By understanding the impact of different institutional conditions at a particular time of reporting, and over time, this would probably justify the CED behaviour of a company.

In summary, this thesis has 405 company-year observations with balanced panel data. For the purpose of data collection, data for dependent variables are collected from ARs and SRs (Section 5.3), whereas data for independent variables are collected using a combination of hand-collected data from ARs, DataStream and MINT Global databases.

Table 5-1: Sample selection in this thesis

Total population of companies in utilities, energy and materials sector (GICS) in the Main Market of BM as at 31 December 2014	173
Exclude companies listed after 1 January 2014	(3)
Exclude companies without AR or SR for 2006, 2008 and 2014	(35)
Total sample of companies for this thesis	135

5.3 Data Source

This thesis draws the textual context from both ARs and SRs published by Malaysian companies. The use of ARs as a main data source for the textual context of CED has been acknowledged in the literature (Amran and Devi, 2008; Gray et al., 1995a; van der Laan et al., 2005; Menassa, 2010; Neu et al., 1998; Unerman, 2000). Among the important reasons are that it is the main form of communication, and the statutory nature of AR enhances its credibility in comparison to other forms of disclosure. However, one particular argument regarding the use of only one data source, for example AR, is that, it is unlikely to offer a complete picture of CED (Cormier et al., 2005; Gamerschlag et al., 2011; Guthrie et al., 2008). Moreover, the use of one data source tends to discriminate the CED reporting by a strong company when they use different channels of reporting. Despite the need to combine different data sources for CED, SRs and web disclosures are criticised for being a tool for impression management and lacking in credibility (Barkemeyer et al., 2014; Branco and Rodrigues, 2007). The limitations of web disclosures in the form of Hyper Text Mark-up Language (HTML) are also due to the lack of assessability of reports from a company's home page and the timeliness of reported data because the data comes without "date stamping" and this leads to difficulties in identifying whether the content is regularly updated (Adams and Frost, 2006; Zhang et al., 2007). Therefore, it is concluded that the choice of any one data source or combined data source is susceptible to its own limitations.

In Malaysia, BM, through the respective *2006 BM MM Listing Requirements* and *2006 BM Ace Market Listing Requirements*, requires companies to provide CSD in ARs. However, these requirements do not restrict Malaysian companies from producing SRs or website disclosures. Accordingly, this has been reflected in the ACCA MaSRA Awards⁴⁶ that give recognition to ARs and SRs by splitting the award category based on the reporting medium (ACCA Malaysia, 2007, 2014). Therefore, in line with this different reporting medium recognised by the ACCA MaSRA Awards, and in addressing the limitation of data sources obtained from ARs in the existing Malaysian CED studies (see Appendix 1), this thesis uses both ARs and SRs.

In doing so, the reports are collected from both the website of BM and each sample company. In total, there are 411 reports produced by 135 sample companies for the financial years ended 2006, 2008 and 2014. From the number of reports summarised in Table 5-2, it appears that ARs (Panel A) dominate 99 percent (405 reports) of the total reports examined in this thesis, and the remainder are SRs (Panel B: 6 reports). This gives an indication that ARs are the main medium for communicating CED as enforced by the *2006 BM MM Listing Requirements*, and that Malaysian companies are lagging behind in reporting through SRs.

To acknowledge the limited use of SRs, this thesis also examines the web disclosures for ten companies in the sample, based on a random selection⁴⁷. This serves as a preliminary indication of CED via web disclosures and therefore subject to further examination as explained in the recommendation section of this thesis. Of these ten companies, only three (Puncak Niaga, TNB and Ta Ann) disclosed CSD (where CED is a part of it) via web disclosures. Of the three companies that have a dedicated page for CSD, only two companies (TNB and Ta Ann) have mentioned CED specifically. Despite the advantage of web disclosure is providing real-time information (Debreceeny et al., 2002), the CED via web disclosures of TNB and Ta Ann appears not up-to-date. For example, at the time of web disclosure

⁴⁶ A collaboration between ACCA Malaysia and DOE Malaysia

⁴⁷ This examination was carried out between 1 October 2016 to 31 October 2016.

examination, the reporting year is 2015. TNB however, furnish CED information up to the 2013 reporting year, while for Ta Ann the reporting year for CED information is unknown. Results and discussions of CED reporting medium are presented in Section 6.2 and Section 8.3 respectively.

Table 5-2: Summary of reports analysed in this thesis

Panel A: Annual reports	2006	2008	2014	Total
Utilities	10	10	10	30
Energy	15	15	15	45
Materials	110	110	110	330
Total reports	135	135	135	405
Panel B: Sustainability reports	2006	2008	2014	Total
Utilities	-	1	1	2
Energy	-	-	1	1
Materials	-	-	3	3
Total reports	0	1	5	6
Total reports (Panel A and B)	135	136	140	411

5.4 Content Analysis

Many researchers have employed content analysis to examine CED (and CSD) (Aerts et al., 2008; Albertini, 2014; Beck et al., 2010; Campbell et al., 2005; Freedman and Stagliano, 2002; Hrasky, 2012; O'Donovan, 2002; van Staden and Hooks, 2007). Content analysis is “a technique for gathering data that consists of codifying qualitative information in anecdotal and literary form into categories in order to derive quantitative scales of varying levels of complexity” (Abbott and Monsen, 1979, p. 504). Krippendorff (2004) stressed that this process of codifying information should be done in a systematic manner to ensure its reliability and validity. Reliability allows replicability of a coding process at a different point of time, whereas validity relates inferences from text to the specific context of the study.

This thesis chooses the content analysis technique because of its four advantages as emphasised by Krippendorff (2004) and Weber (1990). First, content analysis is an unobstructed technique because it neither requires participation from the subject

under investigation nor influences the behaviour of the subject. In this context, content analysis enhances external validity because the researcher is external to the subject. Second, content analysis preserves documents of various kinds in their original form although it handles the unstructured data according to the researcher specific context. Therefore, content analysis enables time-series examination, and the researcher can utilise the same source of documents to undertake a different context of studies. Third, as content analysis recognises the originality of textual data in various documents, content analysis is context sensitive. Hence, content analysis can accommodate the researcher's own inferences. Last, content analysis permits the analysis of large volumes of data in a systematic and replicable manner.

CED researchers generally choose either a mechanistic or interpretative approach when applying content analysis (Beck et al., 2010; Brennan et al., 2009). Smith and Taffler (2000) stated that mechanistic content analysis involves both form-oriented disclosure that measures the textual disclosure based on volume (i.e., volume-based CEDQty), and meaning-oriented disclosure that measures the underlying themes in the text (i.e., extent-based CEDQty). In enhancing the mechanistic content analysis, some studies have applied semiotic assumptions (e.g. Deegan and Gordon, 1996; Yusoff and Lehman, 2009), which according to Unerman (2000), describes the importance level of such disclosure (e.g., positive versus negative news).

Meanwhile, interpretative content analysis reflects the richness of disclosure information of extent-based CED by giving greater weight to more informative disclosure because this type of information provides more meaning to readers (i.e., CEDQ) (Beck et al., 2010). Studies that utilise interpretative content analysis include Clarkson et al. (2013), Cormier and Magnan (2015), Plumlee et al. (2015) and Wiseman (1982). Although there are debates that interpretative content analysis is superior to mechanistic content analysis (see Section 3.3), this thesis employs both content analysis approaches because Weber (1990) argued that a combination of both methods makes for the best content analysis studies. Moreover, a close examination of the literature (see Table 3-2) demonstrates that more recent studies (after 2008 publications) engage in only one or the other approach to content

analysis. Thus, the use of both content analysis approaches (extent-based CEDQty and CEDQ) in this thesis adds to the empirical evidence of CED.

The following subsections will discuss the development of the research instrument. This includes the corporate environmental disclosure index (Section 5.4.1), validating and reliability of the index (Section 5.4.2), and the coding process and reliability of the coding process (Section 5.4.3).

5.4.1 Research Instrument: CED Index

In content analysis, a clear and accurate definition of an instrument is essential to guide the coding process. Similarly, in CED research, the construction of a CED instrument or index requires identification of relevant environmental information, and researchers in this area have attempted to develop various CED indices based on their understanding of the phenomena under investigation. As discussed in Chapter 3, there is no clear definition of what constitutes environmental information, and as a result a CED index is a matter of subjective judgement. Moreover, there is no one CED index fit for all studies because prior studies have demonstrated that international and domestic institutional factors have influenced CED, and therefore a CED index has a country-specific context (Gray et al., 1995a; Kuo and Chen, 2013; Magness, 2008; de Villiers and van Staden, 2006).

In this thesis, as a starting point, a CED index is developed based on the examination of CED practices in past studies (see Table 3-2). This preliminary CED index is then adjusted according to the international environmental reporting guidelines and Malaysian policies, legislation and guidelines related to environmental items. The international guidelines are the Global Reporting Initiative (2006, 2011b, 2013), the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (WBCSD and WRI, 2004), and the Guide to Corporate Sustainability (United Nations Global Compact, 2014). Unlike other countries that have mentioned specifically what items constitute mandatory environmental disclosure (Criado-Jiménez et al., 2008; Vormedal and Ruud, 2009),

in the Malaysian context, the *BM MM Listing Requirements* (Paragraph 29, Part A, Appendix C) was silent about that. In a similar vein, the *2006 BM CSR Framework* version indicated neither specific items for the four areas of CSD nor specific environmental items for disclosures. This leads the current research to review the updated version of the framework, that is, the *2015 BM Sustainability Reporting Guide*, even though this guideline has only taken effect since the beginning of 2016. The researcher is of the view that although this guideline is beyond the reporting periods examined in this thesis, such a guideline is useful in that it captures the CED items that are expected from companies.

Aside from the *BM MM Listing Requirements* and *BM CSR Framework* (or *BM Sustainability Reporting Guide*), this thesis also incorporates a group of environmental legislations (MY1), three environmental policies (MY2 to MY4), and four additional guidelines (MY7 to MY10) as specified in Table 5-3 to construct the CED index. These Malaysian pronouncements were produced by different institutions in Malaysia, and this thesis integrates the specified pronouncements that relate to environmental reporting in a comprehensive manner which, to the researcher's knowledge, is absent in other Malaysian CED studies. For example, while Hamid et al. (2015) and Sulaiman et al. (2014) made reference to the *BM CSR Framework* and ACCA MaSRA Award criteria in constructing their CED index, Haji (2013b, 2013a), and Esa and Ghazali (2012) used the *BM CSR Framework* and the *Silver Book*, respectively, to proxy for event changes. Finally, although Iatridis (2013) followed Clarkson et al.'s (2008) index that was based on GRI, his work has not acknowledged the environmental related policies, legislation or guidelines in Malaysia.

Table 5-3: Malaysia environmental policies, legislation and guidelines

MY1	Environmental Quality Act (1974) and revised (2012b), Environmental Quality (Clean Air) Regulations 2014, Environmental Quality (Industrial Effluent) Regulations 2009, Environmental Quality (Scheduled Wastes) Regulations 2005
MY2	National Policy on the Environment (2002)
MY3	National Policy on Climate Change (2009)
MY4	National Policy on Green Technology (2009)
MY5	Bursa Malaysia CSR Framework (2006a) and Bursa Malaysia Sustainability Reporting Guide (2015a)
MY6	Bursa Malaysia Main Market Listing Requirement (2006c, 2015b)
MY7	Silver Book (2006c)
MY8	Powering Business Sustainability: A Guide for Directors (2010)
MY9	Best Business Practice Circular 5/2013: Corporate Responsibility - Guidance to Disclosure and Reporting
MY10	A Toolkit to Implement Green Business (2015)

Considering the limitation of past studies in incorporating the international (IN), and Malaysian pronouncements (termed as guidelines) (MY) of CED in a comprehensive manner, column 3 and column 4 of Table 5-4 shows a comparison between CED items based on both perspectives. In total, there are 30 CED items in the CED index, comprising six CED dimensions: environmental governance; environmental initiatives and performance indicators; environmental expenditures; environmental compliances and risks; stakeholder engagement; and credibility.

Table 5-4: CED index

No	Items	IN	MY
A	Environmental governance (a, b, c, e)		
A1	A statement on commitment to the protection of the environment [e.g., in vision, mission, values, principles, code of conducts, environmental policy]	YES	YES
A2	A statement about a company's environmental management system	YES	YES
A3	Board and/or; committee and/or; department and/or officers of environmental management [inclusive Operational, Safety and Health (OSH), or Safety, Health and Environment (SHE) committee]	YES	YES
A4	Stakeholder involvement in setting a company's environmental policy and/or environmental disclosure process	YES	NO
A5	Board and/or employee training in relation to environmental management practices	YES	YES
B	Environmental actions and environmental performance indicators (a, b, c, d)		
B1	Air emissions and management [inclusive (1) hazardous substances eg: dust, dark smoke, emissions with metallic compound; and/or (2) greenhouse gas e.g., carbon dioxide, methane, nitrous oxide, etc. in the atmosphere]	YES	YES
B2	Solid waste and effluent (to inland waters and into Malaysian waters) generation and management [inclusive (1) hazardous e.g., schedule waste; and (2) non-hazardous e.g., general waste]	YES	YES
B3	Water consumption and efficiency	YES	YES
B4	Energy consumption and efficiency [from renewable and non-renewable sources]	YES	YES
B5	Materials consumption and efficiency [(1) sourcing of non-renewable and renewable input materials inclusive purchasing of eco-friendly products; (2) composition of materials used]	YES	YES
B6	Noise and odour pollution	NO	YES
B7	Biodiversity conservation [e.g., protection of wildlife, marine life, tree planting for green ecosystems, protection of wetlands]	YES	YES
B8	Land remediation, contamination or degradation [eg: deforestation, oil or chemical spills, reforestation, rehabilitation]	YES	YES
B9	Other remediation efforts [not covered from B1 to B8]	NO	YES
B10	Recycling/ reuse/ reduce [e.g., paper, others if not cover under B1 to B9]	YES	YES
B11	Product / services responsibility [(1) environmental impact assessment on existing/new project/product/service lifecycle inclusive of product design, development, testing, etc.; (2) eco-friendly products/services]	YES	YES
C	Environmental expenditures (a, b, c)		
C1	Investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency [past, current, future)	YES	YES
C2	Operating costs of assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency [past, current, future]	YES	YES
C3	Financing for investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency [past, current, future]	NO	YES

No	Items	IN	MY
D	Environmental compliance and risk (a, b, c, d)		
D1	Environmental compliance status of relevant laws and guidelines [e.g., compliance status of facilities, litigation; fines, penalties, orders to conform, corrective actions, incidents]	YES	YES
D2	Environmental risks assessments [e.g., environmental risk provision, environmental liability]	YES	YES
E	Stakeholder engagement (a)		
E1	Employee environmental engagement programme within company	NO	YES
E2	Community outreach programmes [e.g., environmental education awareness to school]	YES	YES
E3	Donation and/or partnership with environmental organisation /external parties in relation to environmental campaign/practices	YES	YES
E4	Engagement in supply chain in relation to products/services produced/offered [e.g., customer, supplier such as environmental assessment requirement, recycling program]	YES	YES
F	Credibility (a, b, c)		
F1	Independent assurance of environmental disclosure	YES	NO
F2	Certification of environmental related standards	YES	NO
F3	Environmental auditing	YES	YES
F4	Product certification with respect to environmental impact	YES	NO
F5	Awards	NO	YES

Notes: (a) Clarkson et al. (2008); (b) Cormier et al. (2005); (c) Wiseman (1982); (d) Al-Tuwaijri et al. (2004); and (e) Sulaiman et al. (2014)

5.4.1.1 Environmental governance

The first dimension is environmental governance that relates to a company's commitment to environmental protection in terms of policies and environmental management. There are five items under environmental governance that include: (i) a statement on commitment to the protection of the environment which can be incorporated in the vision, mission, values, principles, code of conducts and environmental policies; (ii) a statement about a company's environmental management system whether it is developed based in compliance to ISO 14001 or a company's own definition of an environmental management system; (iii) the existence of an environmental management office through the board, committee, department and/or appointment of officers that handle the environmental management in a formal company structure; (iv) stakeholder involvement in setting a company's environmental policy and/or process of environmental disclosures;

and finally (v) environmental management training which involves the company's board of directors and employees. While all the five items are included in the international environmental reporting guidelines, stakeholder involvement in setting a company's environmental policy and/or process of environmental disclosures is absent in the Malaysian guidelines.

5.4.1.2 Environmental actions and performance indicators

Unlike Clarkson et al. (2008) who differentiated environmental actions as soft disclosure and performance indicators as hard disclosure, the second dimension combines both in the view that a company's specific environmental actions lead the company to measure its actions through environmental performance indicators addressing such specific actions. Therefore, this disclosure dimension includes 11 items that cover: air emissions and management; solid waste and effluent generation and management; water consumption and efficiency; energy consumption and efficiency; materials consumption and efficiency; noise and odour pollution; biodiversity conservation; land remediation, contamination or degradation; other remediation efforts; recycling, reuse, and reduce; and products and service responsibility. Of the 11 items, disclosures related to noise and odour pollution are absent from the international guidelines, but are included in the *Environmental Quality Act (1974)* (see Table 4-1), the *2002 National Policy on the Environment*, and the *2006 Silver Book*, as well as in the study of Cormier et al. (2005). The remaining items except for other remediation efforts are incorporated in both the international and Malaysian guidelines.

5.4.1.3 Environmental expenditures

The third dimension is environmental expenditures, which focuses on financial implications in relation to product/service/process improvement to enhance environmental performance and efficiency (includes innovation, and research and development expenditures). Such disclosures can be itemised into the forms of investment in assets, operating costs of respective assets, and financing of respective assets. Although the international guidelines only capture the first two

items, all three items are included in the Malaysian guidelines, with the last item specifically mentioned in the *2009 National Policy on Climate Change*, and the *2009 National Policy on Green Technology*.

5.4.1.4 Environmental compliance and risk

The fourth dimension is concerned with the environmental compliance and risk. Two items constitute this dimension, that is, environmental compliance and environmental risks assessments. A company's compliant status is gauged based on its compliance with relevant environmental laws and guidelines irrespective of whether the disclosure relates to positive news (e.g., compliance status of facilities) or negative news (e.g., penalties). The next item under this dimension measures the disclosure of environmental risk assessments made by companies in regard to the environmental risk provision and environmental liability. In the review of the international and Malaysian guidelines, both items are included in the respective guidelines.

5.4.1.5 Stakeholder engagement

The fifth dimension is categorised as stakeholder engagement and includes four items. The first item covers employee environmental engagement programme within an organisation (e.g., no plastic bag day) which is mentioned in the *2002 National Policy on the Environment*, *2009 National Policy on Climate Change*, *2009 National Policy on Green Technology* and *2006 Silver Book*. One possible reason why the employee environmental engagement programme is included in the Malaysian guidelines is the Malaysian Government believes that instilling environmental awareness should begin from internal stakeholders, such as employees, to external stakeholders. This is because it is easier for top management of organisations to control their internal stakeholders than their external stakeholders. Included in this dimension also are an additional three items comprising: (i) community outreach programmes (e.g., environmental education awareness to school); (ii) donation and/or partnership with environmental organisation or external parties in relation to environmental campaign and practices

(e.g., donation to WWF); and (iii) engagement in supply chain in relation to products/services produce/offer (e.g., environmental requirement for supplier, recycling activities with customer). While the first item only appears in the Malaysian guidelines, the last three items are in both guidelines.

5.4.1.6 Credibility

Finally, the credibility dimension is related to providing reasonable assurance of the CED. Five items constitute this dimension including: independent assurance of CED; certification of environmental related standards; environmental auditing; product certification with respect to environmental impact; and awards. While environmental auditing is the only item that is recognised in both guidelines, awards are only recognised in the Malaysian guidelines and the remaining three items only in the international guidelines. The Malaysian guidelines, particularly the *Environmental Quality Act (1974)* and its subsidiary acts, and the *2002 National Policy on the Environment* all encourage companies to conduct environmental auditing in a specific interval to ensure continuous compliance with environmental regulations. In addition, the *2009 National Policy on Climate Change* recognises environmental awards as items that promote the credibility of a company in environmental protection. Recognition of awards is included in the Malaysian guidelines probably because it is a part of institutional mechanisms to boost companies' responses to environmental responsibilities. An award also signifies the collaboration of regulators and professional accounting bodies in upholding environmental responsibilities in Malaysia. Authors that support the inclusion of this item in their research instrument include Hamid et al. (2015), Haji and Ghazali (2013a), and Sulaiman et al. (2014).

5.4.1.7 International guidelines versus Malaysian guidelines

In addition to grouping the total of 30 CED items according to the above six dimensions, this thesis also categorises these items into three: international guidelines only, Malaysian guidelines only, and both international and Malaysian guidelines. This categorisation assists in answering the third research question: that

is, to what extent have the international and the Malaysian guidelines influenced CED by Malaysian companies? This attempt allows this study to analyse the impact of institutional influences through such guidelines in a particular reporting year, and over time. To analyse this, it is essential to determine the number of items constituting each group. Table 5-5 summarises that, of the 30 items, there are four items in the international guidelines only, five items in the Malaysian guidelines only, and 21 items in both the international and Malaysian guidelines.

Table 5-5: Summary of convergence and divergence of the international and Malaysian guidelines based on individual reporting items

Group of guidelines	Specific CED items	Total
International guidelines only	A4, F1, F2, F4	4
Malaysian guidelines only	B6, B9, C3, E1, F5	5
Both Malaysian and international guidelines	A1, A2, A3, A5, B1, B2, B3, B4, B5, B7, B8, B10, B11, C1, C2, D1, D2, E2, E3, E4, F3	21
Total specific CED items	-	30

Next, the impact of institutional influences in each of these groups is analysed by examining the average company reporting per individual CED item in each year of 2006, 2008 and 2014. The impact of institutional influences over time then can be measured by computing the percentage of change in individual CED item according to these groups based on absolute growth and relative growth. The former is a common measure of growth by calculating the change of reporting between current and previous years over the previous year (e.g. KPMG, 2015).

However, Yang and Farley (2016) argued that the change based on this absolute growth may distort the growth analysis when the value in the base year is low, in comparison to a high value in the base year. For example, given the same value in the current year of reporting, a low value in the base year will result in a higher percentage of growth. In contrast, a high value in the base year will result in a lower or even negative percentage of growth. Thus, they suggest to measure the change in CED in accordance with the relative growth, that is, by calculating the change between the current year and previous year disclosures, denominated by the change between maximum possible and current year disclosures. The difference between

the absolute growth and relative growth is in the denominator. By utilising the latter, one can identify how many items have already been reported and determine how many remaining items are left for a potential increase in future reporting. This information helps in assessing further improvement relative to expected CED information.

While this thesis follows the percentage of change based on relative growth employed by Yang and Farley (2016) in measuring the convergence and divergence of the international and Malaysian guidelines in influencing CED practices by Malaysian companies, the percentage of change based on absolute growth is also provided (Section 6.6.7) in offering a contrasting view of both methods. The calculation for the percentage of change in CED based on relative growth is expressed as follows:

Equation 5.1: International guidelines only

$$\Delta IN_{t,t-1} = \frac{(IN_t - IN_{t-1})}{(MIN_t - IN_{t-1})} * 100$$

Equation 5.2: Malaysian guidelines only

$$\Delta MY_{t,t-1} = \frac{(MY_t - MY_{t-1})}{(MMY_t - MY_{t-1})} * 100$$

Equation 5.3: Both international and Malaysian guidelines

$$\Delta INMY_{t,t-1} = \frac{(INMY_t - INMY_{t-1})}{(MINMY_t - INMY_{t-1})} * 100$$

Where:

$IN_t - IN_{t-1}$	=	Change between periods t and $t-1$ in the number of items that are supported by international guidelines only
$MIN_t - MIN_{t-1}$	=	Change between the maximum number of items that could have been reported in period t and reported items in period $t-1$ that are supported by international guidelines only
$MY_t - MY_{t-1}$	=	Change between periods t and $t-1$ in the number of items that are supported by Malaysian guidelines only
$MMY_t - MMY_{t-1}$	=	Change between the maximum number of items that could have been reported in period t and reported items in period $t-1$ that are supported by Malaysian guidelines only
$INMY_t - INMY_{t-1}$	=	Change between periods t and $t-1$ in the number of items that are supported by both international and Malaysian guidelines
$MINMY_t - MINMY_{t-1}$	=	Change between the maximum number of items that could have been reported in period t and reported items in period $t-1$ that are supported by both international and Malaysian guidelines

5.4.2 Validity and Reliability of CED Index

One inherent concern of content analysis is the validity of the research instrument in making inferences of the text to a specific domain of study (Unerman, 2000). According to Brennan et al. (2009, p. 802), the validity of content analysis refers to the appropriateness of the conclusions that can be assessed using face validity and construct validity.

The first validity is face validity which focuses on the adequate inclusion of items that intend to measure the specific concept (Brennan et al., 2009). In general, there are two ways to achieve face validity. First, by doing a rigorous examination of the literature reviewed, and second, by engaging panel experts. In this regard, this thesis achieves face validity of the CED index for CED practices in Malaysia by integrating reviews of CED literature with the international and the Malaysian policies, legislation and guidelines pertaining to environmental items. This is consistent with Haji (2013b) who achieved face validity through the review of the literature and the *BM CSR Framework*.

Face validity is enhanced through the reliability of the CED index. Milne and Adler (1999) highlighted that reliability of the CED index is dissimilar to a reliability of

the coding process. However, the discussion on the reliability of the CED index is almost non-existent in the CED body of literature. Milne and Adler (1999) further asserted that reliability of the CED index deals with measurement in that it is based on well-specified dimensions (or categories) and scoring rules. In this thesis, the dimensions of the CED index are developed based on the Malaysian specific-context. While Othman and Ameer (2010) gave different weight to environmental items, this thesis considers all items or dimensions of the CED index as equal because assigning different weight to specific items or dimensions leads to bias in CED (Cooke, 1992; Raffournier, 1995).

In reference to the reliability of the CED index based on scoring rules, this thesis sets these rules in accordance with previous literature. Specifically, the scale for CEDQty is assigned based on unweighted scoring rules, that is, 1 as presence and 0 as an absence of CED items, following Patten (2002). However, the scale for CEDQ is constructed based on weighted scoring rules to reflect the emphasis that companies ascribe to CED items. This thesis modifies the 0 to 3 scales used in Wiseman (1982) by expanding the quantitative scale into quantitative non-monetary and quantitative monetary disclosures. Therefore, the range of scale for CEDQ in this thesis is between 0 and 4 as follows: 0= non-disclosure; 1=brief qualitative disclosure; 2=detail qualitative disclosure; 3=quantitative non-monetary disclosure; and 4=quantitative monetary disclosure. This is similar to the most recent studies in Malaysia (Hamid et al., 2015; Sulaiman et al., 2014).

The second validity is a construct validity which measures the consistency of empirical procedures with the theoretical conception and rigorous evidence from empirical literature (Abbott and Monsen, 1979; Beattie et al., 2004). While some researchers prefer to achieve construct validity by employing different coders, another group of researchers tend to use correlation coefficients. Both Adams et al. (1998) and Brennan et al. (2009) engaged a different person to conduct a pilot test on a number of reports based on their CED index. The purpose was to establish both construct validity and reliability of the research instrument. Throughout this process, increasing consensus on the number of items indicate validity, and where

there is a lack of consensus, the CED index is revised to enhance validity. Botosan (1997) and Beattie et al. (2004) used correlation coefficients to achieve construct validity. According to them, a higher correlation, as shown in Spearman and Pearson correlations, between the total CED index and its dimension, as well as the total CED index with independent variables are indications of construct validity. This thesis follows the recommendation of Brennan et al. (2009) and Krippendorff (2004) by appointing another coder during the initial development of the research instrument, and after revising the research instrument. This coder coded 20 reports in the sample, selected at random from 2006 to 2014 during a pilot study. The results of the pilot study demonstrate that the CED index developed in this thesis is suitable for the Malaysian context. For the full sample, the construct validity is achieved when a different coder coded another 20 reports, different from the pilot test, that are selected at random based on a full sample.

5.4.3 Coding Process and Reliability of Coding Process

Beattie et al. (2004) provided a useful review of steps undertaken to test for coding processes which involve: defining the unit of analysis and categories; doing a pilot test; measuring the reliability of a pilot test; revising scoring rules; coding all reports; and re-assessing reliability. Atlas.ti software is used in the coding process by each coder to ensure the coding process of textual and graphical data from annual and sustainability reports used in this thesis is recorded in a systematic manner.

There are arguments regarding the suitable unit of analysis for recording content analysis. Milne and Adler (1999) pointed out that most CED researchers are confused about the difference between the unit of analysis for measuring the amount of CED (volume-based CEDQty) and the unit of analysis for the coding of CED (extent-based CEDQty). In this thesis, the unit of analysis refers to the coding of CED, and not measuring the amount of CED. This thesis uses sentences, charts, graphical presentations, pictures and photographs for coding the relevant context of 30 CED items. This is consistent with the argument of Raar (2009) that all of these

constitute the elements of sound communication between the sender and the reader. Hence, this allows assessment of CED items based on a meaning-oriented context that is more complete than a volume-based context.

After determining the unit of analysis for the coding process as above, and validating the research instrument through a pilot test (see Section 5.4.2), Krippendorff (2004) stressed the importance of reliability of the coding process. The purpose of this reliability is to ensure consistency and avoid bias in the coding process. There are three types of reliability measures that content analysis researchers can undertake (Krippendorff, 2004). The first type of reliability measures the stability of the coding process in a different time interval. In this view, the same coder performs the coding process on a set of text at a different time. There is no minimum or maximum lapse period between the first and second coding because empirical research has shown that it can range between two weeks (e.g. Gao, 2011; Haji, 2013b) to three months (e.g. Abhayawansa and Guthrie, 2012; Michelon and Parbonetti, 2012). Similarly, there is no threshold limit in the number of reports for re-coding that a researcher should carry (Milne and Adler, 1999). The results of this test-retest determine the reliability or stability of this intra-coder.

The second type of reliability measures the reproducibility of the coding process by different persons. There is no minimum or a maximum number of reports that should be examined to test for inter-coder reliability. For example, Brennan et al. (2009), Clarkson, Overell, et al. (2011), and Krippendorff (2004) suggested 20 reports. This echoed the suggestion of Milne and Adler (1999) who stated that 20 reports permit sufficient learning cycles for performing a reliability test. Other studies, however, have reached inter-coder reliability by coding less than 20 reports (e.g. Abhayawansa and Guthrie, 2012; Amran and Devi, 2008).

The third type of reliability is accuracy that measures the extent to which the analysis conforms to a standard, and normally is achieved by engaging experts (Krippendorff, 2004). However, this type of reliability measure has received less attention in CED studies because of its associated costs in appointing the experts.

In line with the majority of CED studies, and holding onto the argument of Unerman (2000) that the choice of reliability test is dependent upon a researcher's judgement that deems it fit for the purpose of the study, this thesis undertakes intra-coder and inter-coder reliability tests. For the purpose of intra-coder reliability, 45 (10.9%) reports are re-coded by the first coder (the researcher). The second coding takes place two months after the first coding of these reports, and this is consistent with Clarkson, Overelle et al. (2011).

For inter-coder reliability, the test is made with the second coder and third coder. While the second coder codes 20 reports that are selected at random during a pilot test, the third coder codes another 20 reports, different from the second coder, that are selected at random based on a full sample. Thus, in total there are 40 (9.7%) reports being re-coded by these different coders. The result of inter-coder reliability is helpful to assess the consistency of coding items, as well as CED index (items, dimensions, and scoring rules). If disagreement occurs in the coding of the items between different coders, the coders discuss this disagreement, re-check such reports, and, where necessary, revise the CED index.

In calculating the inter-coder and intra-coder reliability, Milne and Adler (1999) recommended the utilisation of a coefficient of agreement between coders as a simple measure of reliability. There is variation in the acceptable level of the coefficient of agreement. It ranges between 80 percent (Milne and Adler, 1999) to 90 percent (Clatworthy and Jones, 2001). Consistent with Milne and Adler (1999), the intra-coder reliability for each of CEDQty and CEDQ is 100 percent and 99 percent, respectively. Meanwhile, the inter-coder reliability of the CEDQty and CEDQ are 89 percent and 92 percent, respectively. Both intra-coder and inter-coder reliabilities meet the minimum acceptable level, which confirms the reliability of the coding process.

5.5 Definition and Measurement of Variables

The operational models in Section 4.6 specify full models to test the association between both CEDQty and CEDQ and factors affecting the two types of CED measurement. In particular, Model 1 represents an aggregate reporting of CEDQty and CEDQ, while Model 2 is a model specification for an individual CED item. Details of the measurement of dependent and independent variables are discussed next.

5.5.1 Dependent Variables

5.5.1.1 CEDQty

CEDQty is measured based on the extent-based measurement that assigns a binary score of 1 for presence and 0 for an absence of environmental items in the CED index (Section 5.4.1). A total quantity score awarded for CED items is computed by adding the scores of all six dimensions disclosure items. The maximum applicable quantity score for CED items is 30. Therefore, CEDQty is calculated as the total quantity score (with the maximum quantity score for each company being 30).

The following equation represents CEDQty:

$$\text{CEDQty}_j = m_j$$

Where:

$$\begin{array}{ll} \text{CEDQty}_j & = \text{Corporate Environmental Disclosure Quantity by company } j \\ m_j & = \text{Number of items disclosed by company } j \text{ (maximum score of 30)} \end{array}$$

5.5.1.2 CEDQ

CEDQ is measured by giving different weights to each quality characteristic within each CED item in the CED index (see Section 5.4.1). Each item, s_j is scored as

follows: 0 = non-disclosure; 1 = brief or descriptive disclosure; 2 = detailed qualitative disclosure; 3 = quantitative non-monetary disclosure; and 4 = quantitative monetary disclosure.

A total quality score awarded for CED items is computed by adding the scores of all six dimensions disclosure items. The maximum applicable quality score for 30 CED items is 120. Therefore, CEDQ is calculated as the total quality score (with the maximum quality score for each company being 120).

The following equation represents CEDQ:

$$CEDQ_j = s_j$$

Where:

$CEDQ_j$	=	Corporate Environmental Disclosure Quality by company j
s_j	=	Total quality scores of all corporate environmental disclosure items for company j (maximum 120)

5.5.2 Independent Variables

This thesis considers institutional pressures for CED that change the institutional environment at the international and the Malaysian levels as an independent variable. The year variable is used to account for variation of CED practices in Malaysia from 2006 to 2014. This thesis also uses company-specific characteristics comprising Islamic influences, corporate governance, financial performances, and control variables as variables that modify how Malaysian companies respond to these institutional pressures in the reporting of CED. Table 5-6 provides a summary of the measurement of variables used in this thesis, followed by a detailed description of the measurement of the independent variables. This table also offers an alternative measure for selected variables to be used in the robustness tests.

Table 5-6: Summary of measurement of variables

Variables	Measurement	Alternative Measurement
Dependent variables:		
CEDQty	Total quantity score	-
CEDQ	Total quality score	-
Independent variables:		
Institutional changes:		
International and Malaysian institutional pressures (Y):		-
Impact of institutional changes between 2006 and 2008 (Y2006)	1 if Y2006; 0 if otherwise	
Base year for impact of institutional changes between years (Y2008)	1 if Y2008; 0 if otherwise	
Impact of institutional changes between 2008 and 2014 (Y2014)	1 if Y2014; 0 if otherwise	
Islamic influence:		
<i>Shari'ah</i> -compliant status (SHA)	1 if <i>Shari'ah</i> -compliant; 0 if otherwise	-
Muslim Chairperson (CHAIR)	1 if a Chairperson is Malay/Muslim; 0 if otherwise	CC
Muslim CEO (CEO)	1 if a CEO is Malay/Muslim; 0 if otherwise	CC
Muslim Chairperson in addition to a Muslim CEO (CC)	1 if both Chairperson and CEO are Malay/Muslim; 0 if otherwise	-
Corporate governance:		-
Female Chairperson (CHAIRG)	1 if a Chairperson is male; 0 if otherwise	
Female CEO (CEOG)	1 if a CEO is male; 0 if otherwise	-
Government institutional ownership (GOVT)	The percentage of government institutional ownership based on substantial shareholdings	INST
Non-government institutional ownerships (XGOVT)	The percentage of non-government institutional ownerships based on substantial shareholdings	INST
Institutional ownership (INST)	The percentage of total institutional ownership based on substantial shareholdings	-
Board size (BS)	Number of directors	D_BS
(D_BS)	1 if board size has at least 8 members; 0 if otherwise	-

Table 5-6: Summary of measurement of variables (continued)

Variables	Measurement	Alternative Measurement
Board independence (ID)	The percentage of independent directors to total directors	D_ID
Board independence (D_ID)	1 if independent non-executive directors are 1/3 or more of board size; 0 if otherwise	-
Women on boards (WOB)	The percentage of women on boards of directors	TWOWOB
Two women on boards (TWOWOB)	1 if at least two women on boards; 0 if otherwise	-
Financial performance:		
Profitability (PRT)	ROE (percentage of net income to total equity)	PRT2
Profitability (PRT2)	ROA (percentage of net income to total asset)	-
Leverage (LEV)	Ratio of long-term debt to total assets	LEV2
Leverage (LEV2)	Ratio of total debts to total assets	-
Control variables:		
Company size (SIZE)	Adjusted natural log total assets	SIZE2
Company size (SIZE2)	Adjusted natural log of total sales	-
Industry (IND):		-
Utilities sector (base industry) (IND1)	1 if the company is in the utilities sector; 0 if otherwise	
Energy sector (IND2)	1 if the company is in the energy sector; 0 if otherwise	
Materials sector (IND3)	1 if the company is in the materials sector; 0 if otherwise	

5.5.2.1 Institutional Changes

International and Malaysian institutional pressures (Y)

In designing the research sample that suits the framework of institutional changes, this thesis involves a span of the study period between 2006 and 2014. During this period, the institutional environments at the international and the Malaysian levels have undergone institutional changes and these could exert different pressures on the CED behaviour by Malaysian companies. To reflect these pressures, this thesis uses year, denoted by Y2006, Y2008 and Y2014 to control for the impact of institutional changes over time. However, since this is a dummy variable, in any model, it is essential to drop a one-year dummy to avoid the problem of a dummy

variable trap⁴⁸ (Baltagi, 2008; Cameron and Trivedi, 2010; Gujarati, 2006; Hair et al., 2010). Therefore, this thesis drops Y2008 from the models (in Section 4-5) and considers this year as the base year because it splits the periods before and after CSD became mandatory in Malaysia. The choice of this year (Y2008) as a base year will enable the analysis of the impact between 2006 (Y2006) and 2008 and between 2008 and 2014 (Y2014).

5.5.2.2 Islamic Influence

Shari'ah-compliant status (SHA)

Shari'ah-compliant status (SHA) is measured by a binary variable: 1 if a company is categorised as *Shari'ah* by the SAC (*Shari'ah* Advisory Council) at time *t*, and 0 if otherwise.

Muslim Chairperson and CEO (CHAIR, CEO, CC)

The *Constitution of Malaysia* defines Malay as a person who embraces Islam, and the Malay Ruler for each state in Malaysia acts as the Head of Islam in their state, while the Malay Ruler for Malaysia positions as the Head of Islam for Malaysia (Section 4.5.2.2). Additionally, Malay names can be distinguished from the rest of other ethnicities in Malaysia based on the naming convention set by the National Registration Department of Malaysia that appears on the birth certificate and national identification card of Malaysian citizens (Choo-Beng, 2000). This naming convention differentiates the names of the Malaysian citizens according to ethnic attributes, that is, ethnic identity and religion. In regard to Malay names, a linking name of 'bin' and 'binti' between a person's name and his or her father's name, informs that such a person owns a Malay identity. This linking name is parallel with the Islamic influence embedded in the Malay culture (Section 4.5.2.2). Thus, it is reasonable to use Malay names as a representation of the espoused Islamic values of a company's top management. Accordingly, this thesis uses Chairpersons and

⁴⁸ It is a situation where a perfect collinearity or multicollinearity exist (Gujarati, 2006).

CEOs with Malay/Muslim names to proxy for Islamic influence in a company's leadership.

A Muslim Chairperson (CHAIR) is proxied using a binary variable. A value of 1 is awarded if the Chairperson is Malay/Muslim at time t , and 0 if otherwise.

Similarly, a Muslim CEO (CEO) is proxied by a binary variable: 1 is awarded if the CEO is Malay/Muslim at time t , and 0 if otherwise.

Instead of testing the separate effect of having a Muslim Chairperson or a Muslim CEO, this thesis offers an alternative measure for CHAIR and CEO, that is, CC. This CC variable is used to examine whether the combined effect of having both the Muslim Chairperson and Muslim CEO (CC) influences CED in the robustness test. For this to take effect, a binary variable 1 is awarded if both Chairperson and CEO are Malay/Muslim at time t , and 0 if otherwise.

5.5.2.3 Corporate Governance

Female Chairperson and Female CEO (CHAIRG, CEOG)

Female Chairperson (CHAIRG) is measured by a binary variable: 1 if a Chairperson is male at time t , and 0 if otherwise.

Female CEO (CEOG) is measured by a binary variable: 1 if a CEO is male at time t , and 0 if otherwise.

Institutional Ownership (GOVT, XGOVT, INST)

In reference to ownership, *BM MM Listing Requirements* (Paragraph 23(e), Part A, Appendix 9C) require companies to disclose their top thirty shareholders in the analysis of the shareholding section in the annual report. Companies are also required to report their substantial shareholders who own at least five percent (5%) of direct and/or indirect shareholdings in the companies (Paragraph 23(a), Part A, Appendix 9C). These disclosures enable identification of institutional ownership,

defined as investment in companies that are held by institutional investors including investment funds, pension funds and insurance companies.

In Malaysia, institutional ownership can be decomposed into government institutional ownership and non-government institutional ownership. Although government institutional ownership can include ownership stakes in a company held by both federal and state government, many researchers have measured government institutional ownership as federal government ownership (Alsaeed, 2006; Amran and Devi, 2008; Esa and Ghazali, 2012; Ghazali, 2007) or state government ownership (Tagesson et al., 2009) only. Therefore, the rest of institutional ownership which falls outside the definition of government institutional ownership is referred to as non-government institutional ownership.

For the purpose of this thesis, institutional ownership (INST) is measured as the percentage of total shareholding held by institutional investors, holding at least five percent (5%) direct shareholding in a company, and these investors comprise both government and non-government institutional investors. This measure is consistent with Saleh et al. (2010). Although Section 69D of the *Malaysian Companies Act 1965* defines a five percent minimum shareholding as substantial shareholdings (Malaysian Government, 2006d), it is noteworthy to caution that the measure may understate the true institutional ownership because it is not based on overall shareholdings. This INST measurement, however, acts as an alternative measure of government institutional ownership (GOVT) and non-government institutional ownership (XGOVT) for the robustness test.

In determining the list of institutional investors classified as government institutional ownership (GOVT), this thesis follows the definition provided by the Ministry of Finance, Malaysia. There are seven federal government GLICs (government-linked investment companies) in Malaysia which include investment funds, pension funds and insurance companies. These institutions are: MOF Inc. (Ministry of Finance (Incorporated)), Khazanah (Khazanah Nasional Bhd), LTAT (Lembaga Tabung Angkatan Tentera), EPF (Employees Provident Fund), KWAP

(Kumpulan Wang Amanah Pencen), LTH (Lembaga Tabung Haji), and PNB (Permodalan Nasional Berhad) (www.pcg.gov.my). Therefore, the measurement of government institutional ownership (GOVT) is represented by the percentage of total shareholding held by these institutions, holding at least five percent direct shareholding in a company. This measurement is consistent with Esa and Ghazali (2012) and Ghazali (2007).

The rest of the institutional ownership, including state government ownership, are defined as non-government institutional ownership (XGOVT) and measured by the percentage of total shareholding held by institutional investors, excluding federal government GLICs, holding at least five percent direct shareholding in a company.

Board Size (BS, D_BS)

Past research has accepted that there is only one measure of board size (Amran, Lee, et al., 2014; Michelon and Parbonetti, 2012; Said et al., 2009). Therefore, board size (BS) is proxied by the total number of directors on the board.

In addition, this thesis also introduces an alternative measure of board size for the robustness test, that is, D_BS. This is a dummy variable that sets a value of 1 if board size comprises of at least eight members at time t , and 0 if otherwise. The cutoff point of eight members is consistent with the argument of Jensen (1993) who suggested this as an ideal board size for governance efficiency.

Board Independence (ID, D_ID)

Board independence refers to the type of board membership – be it non-executive or independent directors. While non-executive directors refer to those who are not involved in the daily management of companies but play oversight roles of the executive directors (inside directors), these non-executive directors can be classified as independent or non-independent directors. Independent non-executive directors are outside directors who are appointed as board members to monitor and control the actions of inside directors. Meanwhile, non-independent non-executive

directors are board members who have personal and/or professional relationships with companies (KPMG Malaysia, 2013).

There are two common measures of board independence: the percentage of non-executive directors to total directors, and the percentage of independent non-executive directors to total directors (Brammer et al., 2009; Rupley et al., 2012). In this thesis, board independence (ID) is measured by the proportion of independent non-executive directors to the total number of directors on the board.

A dummy variable of board independence (D_ID) is provided as an alternative measure for the robustness test. This variable takes the value of 1 if the composition of independent non-executive directors is at least one-third of the board size, and 0 if otherwise. The cutoff point of one-third independent non-executive directors to total board members is consistent with the *MCCG* requirement pertaining to board independence (SCM, 2012).

Women on Boards (WOB, TWOWOB)

The presence of women directors on the board (WOB) is measured as the percentage of women directors on the board to the total number of directors on the board (Liao et al., 2015; Rao et al., 2012).

This thesis also uses an alternative measure of TWOWOB to test a critical mass theory of a minimum number of women directors to influence board decision. This TWOWOB variable is a dummy variable with a value of 1 that represents the presence of at least two women directors on the board and 0 if otherwise. The cutoff point of two women directors on board is consistent with Ben-Amar et al. (2017).

5.5.2.4 Financial Performance

Profitability (PRT, PRT2)

In disclosure literature, researchers have used accounting-based measures and market-based measures to proxy for profitability. However, accounting-based measures are preferable in accounting literature because they represent a wider

stakeholder interest than market-based measures that represent the interest of investors (Reverte, 2012). For accounting-based measures, return on assets (ROA), return on equity (ROE), and return on sales (ROS) are three common measures of profitability (Ben-Amar and McIlkenny, 2015; Giannarakis, 2014a, 2014b; Rupley et al., 2012).

Consistent with prior literature, accordingly this thesis measures profitability (PRT) using return on equity (earnings before interest and tax divided by common equity). This thesis also uses return on assets (earnings before interest and tax divided by total assets) as an alternative measure of profitability (PRT2) in the robustness test.

Leverage (LEV, LEV2)

The common measures of leverage in previous disclosure literature are the ratio of debts to assets, the ratio of debts to equity, the ratio of debts to capital employed, and the ratio of average assets to average common equity (Ben-Amar and McIlkenny, 2015; Brammer and Pavelin, 2006a; Clarkson et al., 2008; Cormier et al., 2011; Giannarakis, 2014a; Haniffa and Cooke, 2002; Peters and Romi, 2013). This thesis employs the ratio of long-term debts to total assets as a proxy for leverage (LEV), consistent with Cormier et al. (2011). In addition, this thesis also uses the ratio of total debts to total assets as an alternative measure of leverage (LEV2) for the robustness test, in line with Clarkson et al. (2008).

5.5.2.5 Control Variables

Company Size (SIZE, SIZE2)

The majority of CED (and CSD) studies consider company size as representing the company's visibility (Chapter 3). These studies mainly rely on total assets, total sales, turnover, market capitalisation and number of employees as representation of company size (Adams et al., 1998; Branco and Rodrigues, 2008; Gao et al., 2005; Hackston and Milne, 1996; Roberts, 1992; Rupley et al., 2012; Smith et al., 2007). Many of these studies which use total assets and total sales transform the original value into a natural log of total assets (e.g. Cormier and Magnan, 2007; van Staden

and Hooks, 2007) and natural log of total sales (e.g. Patten, 2002; Wiseman, 1982) to control for non-linear effects.

Consistent with previous literature, this thesis uses the natural log of total assets as the measurement of company size (SIZE). The natural log of total sales is used as the alternative measure of company size (SIZE2) for the robustness test. Since the data in this thesis is panel data, a deflator is required to control for the inherent limitation of a time-series data in panel data (Frees, 2004). Therefore, a Gross Domestic Product (GDP) deflator is utilised, with 2006 set as the base year. Accordingly, the following steps are undertaken to convert the original data into adjusted natural log: first, reindex the Malaysian GDP deflator in each year of 2006, 2008 and 2014 to 2006, by dividing GDP deflator at time t to GDP deflator at 2006; second, divide total assets or total sales at time t with the value in the first step; last, convert the value in the second step into natural log. The formula of the above calculation is presented below:

$$\text{SIZE} = \ln [\text{total assets}_t / (\text{GDP deflator}_t / \text{GDP deflator}_{2006})]; \text{ or}$$

$$\text{SIZE2} = \ln [\text{total sales}_t / (\text{GDP deflator}_t / \text{GDP deflator}_{2006})]$$

Industry (IND1, IND2, IND3)

Industry (IND) is represented by three dichotomous variables, denoted by IND1 to IND3. In this thesis, IND1 represents the utilities industry, IND2 represents the energy industry, and IND3 represents the materials industry. Since this is a group of dichotomous variables, similar to institutional influences, it is necessary to drop one industry dummy in any model to avoid a dummy variable trap (Baltagi, 2008; Cameron and Trivedi, 2010; Hair et al., 2010). Thus, this thesis drops IND1 from the models and maintains IND2 and IND3. IND1 serves as the reference industry to test the significance of one particular industry to a reference industry.

5.6 Statistical Methods

This thesis employs several statistical techniques to explore the data and test the research hypotheses, which includes descriptive statistics (Section 5.6.1), correlation (Section 5.6.2), and multivariate analyses. Before conducting the multivariate analysis, multicollinearity tests were assessed. In regard to the normality, this thesis relies on the assumption of the Central Limit Theorem (CLT) that posits the mean of all samples from a population is approximately equal to the mean of the same population if there is a sufficiently large sample size from such population (Gujarati, 2006). He further stated that:

If there is a large number of independent variables and identically distributed random variables, then, with a few exceptions, the distribution of their sum tends to be a normal distribution as the number of such variables increases indefinitely (2006, p. 177).

The data in this thesis satisfies the CLT. The sample companies include all companies in the population of the three selected industries. Although companies that did not have annual reports in any reporting years of 2006, 2008 and 2014 were excluded from the examination to generate balanced panel data, the number of companies in each year of reporting is more than 100 and this is considered as a moderate sample size to assume the coefficient of the residual is normally distributed (Lumley et al., 2002). In this case, Lumley et al. (2002) further conclude the data can be analysed by using regression analysis without normality test. Moreover, in total there were 17 independent variables in the models, and therefore these were sufficient for meeting the requirement of normality assumption in the CLT (Gujarati, 2006). This is in line with the argument by Schmidt and Finan (2018) that where the number of observations per variable is more than 10, the normality test is not required in the t-test and regression analysis as it does not impact the results. This thesis uses Welch's t-test as suggested by Delacre et al. (2017) in comparing the mean between groups because the Welch's t-test provides a better control of Type 1 error based on the assumption that the standard deviation

within each group is unequal. Meanwhile, the assessment of the multicollinearity test is discussed together with the correlation analysis (see Section 5.6.2).

In the multivariate analysis, this thesis uses Generalised Estimating Equation (GEE) forms of multivariate linear regression models and multivariate logistic regression models that recognise the panel data analysis in the SPSS software (see Section 5.6.3 and Section 5.6.4). Although three levels of statistical significance ($p \leq 0.10$; $p \leq 0.05$; and $p \leq 0.01$) are reported, this thesis uses the conventional five percent level of significance ($p \leq 0.05$) for both two-tailed and one-tailed hypotheses (Cohen, 1992; Hair et al., 2010) in assessing the level of statistical significance of independent variables in the models.

The utilisation of the GEE approach that suits the panel data analysis in SPSS, however, does not produce the common measure of goodness of fit (GOF) of a model, that is, R^2 (R-squared or coefficient determination) for a multivariate linear regression model and pseudo- R^2 for a multivariate logistic regression model. The R^2 measures a proportion of variance of the dependent variable, explained by independent variables in a model. Meanwhile, the pseudo- R^2 measures the maximum likelihood estimates (MLE) of the log odds, with the R ranges between 0 to 1 in both the binary logistic (in CEDQty) and ordinal logistic (in CEDQ) models (Cameron and Trivedi, 2010). Instead, the GEE provides QICC (Corrected Quasi Likelihood under Independence Model Criterion). However, since it is difficult to interpret QICC for a model fit, this thesis uses STATA statistical package to obtain an R^2 for the CEDQty and CEDQ panel data models. In confirming the sensitivity of such models, this thesis performs robustness tests (see Section 5.6.5).

5.6.1 Descriptive Statistics

Descriptive statistics provide information on the basic properties of the data including count, mean, standard deviation, minimum and maximum values. The

empirical findings on descriptive statistics for dependent variables are presented in Chapter 6, while independent variables are provided in Chapter 7.

5.6.2 Correlation Analysis

Correlation analysis is a part of the inferential statistics and is used to measure the association between variables (Hair et al., 2010). In general, the Pearson's product moment correlation coefficient, r , is commonly used to assess correlation as it offers information on the strength and direction of the association between two variables which range from -1.0 to +1.0 through the correlation matrix. Accordingly, this thesis uses a correlation value of greater than 0.9 as an indication of a possible existence of multicollinearity (Hair et al., 2010).

Multicollinearity refers to a condition of a strong correlation between independent variables. Failure to address multicollinearity will result in a bias and inefficient coefficient estimation, and ultimately an incorrect model (Baltagi, 2008). Thus, an appropriate approach to test for multicollinearity is by using the Variance Inflation Factor (VIF) because a high correlation value in the correlation matrix is a necessary condition for multicollinearity, but it is not a sufficient condition for detecting multicollinearity (Baltagi, 2008). According to Hair et al. (2010), the value of VIF greater than 10 indicates a necessary condition for multicollinearity and one way to remedy this is by using alternative measures. However, an examination of the data indicates that there was no multicollinearity concern about the data employed in this thesis as any VIF values greater than 10 are excluded from the models (see Section 7.2.2).

5.6.3 Panel Data Multivariate Linear Regression

The sampling frame for this thesis examines 135 companies for the three year periods by eliminating companies that did not produce reports in either year of examination (2006, 2008, and 2014). Thus, the type of general linear model

employed in this thesis to model the aggregate CEDQty and CEDQ is a panel data regression, with a balanced panel that has 405 company-year observations (135 companies x 3 years).

This thesis chooses the panel data analysis for several reasons. Panel data scholars (e.g. Baltagi, 2008; Hsiao, 2003) argued that panel data regression has a number of attractive features that distinguishes it from cross-section and time-series analyses as follows:

1. Panel data accounts for cross-section data and time-series data, so it offers richer information with more degrees of freedom, more variability and less collinearity among variables;
2. Panel data reduces bias in the results in the situation when individual data are pooled into broad aggregates because the panel data is characterised by wealthy information;
3. Panel data controls for subject heterogeneity, which is embedded in the cross-section data;
4. Identification and estimation of dynamic behaviour are more visible in panel data than in cross-section data or time-series data; and
5. The effects of unobserved variables are better detected and measured in the panel data compared to the cross-section data and time-series data.

As a result of the above-mentioned advantages of panel data regression, numerous studies related to corporate disclosure have employed such regression, including Fernandez-Feijoo et al. (2014), Frias-Aceituno et al. (2014), and Moroney et al. (2012). For instance, Moroney et al. (2012) used unbalanced panel data to understand the impact of environmental assurance on voluntary CED of 148 Australian publicly-listed companies based on their 2003 to 2007 annual reports and sustainability reports. Likewise, Meng et al. (2012) studied the effect of top executives' turnover on CED practices by Chinese publicly-listed companies, however, using a balanced panel data involving 782 manufacturing companies over a three year period. Thus, the utilisation of panel data in this thesis is consistent

with such studies in understanding how the time dummies (represented institutional pressures) and the Malaysian company-specific characteristics influence CED practices.

This thesis notes that panel data regression is divided into two main models, namely, a static panel data model and a dynamic panel data model (Baltagi, 2008; Cameron and Trivedi, 2010; Gujarati, 2003). This thesis applies a static panel data model because a dynamic panel data model is only suitable if there is an existence of lagged dependent variables in the regressors, which is not applicable in this thesis.

In general the static panel data model is:

$$Y_{jt} = \alpha + \beta X_{jt} + \varepsilon_{jt} \text{ (Equation 5.1)}$$

where j denotes subjects with $j = 1, 2, 3, \dots, N$; and t denotes time-periods with $t = 1, 2, 3, \dots, T$. α and β are the parameters, while X is the explanatory variables. ε_{jt} is the error terms that comprise subject-specific error effects, μ_j , and the remainder error effects, v_{jt} , as below:

$$\varepsilon_{jt} = \mu_j + v_{jt} \text{ (Equation 5.2)}$$

Since this thesis employs the static panel data model, it is important to note that this model is grounded by two primary assumptions (Hsiao, 2007). Firstly, the effects of independent variables of interest, X , in Equation 5.1 are indistinguishable across subjects (j), and over time (t). Secondly, the unobserved effects (the error term) in Equation 5.2 comprises of the subject-specific error effects (μ_j), time-specific error effects (λ_t), and subject time-varying error effects (δ_{jt}). The last two are combined as the remainder error effects (v_{jt}). To simplify, a panel data describes that some variables are time-invariant (μ_j : variables that are constant over time), or subject-invariant (λ_t : variables that are varies across time), while some other variables differ across subjects and time (δ_{jt}). This condition is known as heterogeneous (Cameron and Trivedi, 2010). Accordingly, this thesis formulates the static panel data model

that captures these heterogeneous characteristics in Model 1.1 (see Section 4.6.1). This model represents the model for each of overall reporting of CEDQty and CEDQ. The same model also represents the aggregate reporting of each six dimensions of CEDQty and CEDQ. Overall, there are seven separate regressions for each of CEDQty and CEDQ.

5.6.4 Panel Data Multivariate Logistic Regression

One of the interests of this thesis is to test the propensity to report each CED item. Since the individual CED item of CEDQty is a dichotomous dependent variable, whereas CEDQ is a multi-dichotomous dependent variable, a logistic regression is an appropriate technique to model an individual CED item across companies and time (Hair et al., 2010). A logistic regression is derived from a logit function that represented CEDQty or CEDQ as a probability of getting one of the value (0 to 1 for CEDQty, and 0 to 4 for CEDQ). This probability represents the propensity that company j will report individual CED item at time t (PTR_{jt}).

For example, a result of 0.90 in the value of 1 in CEDQty indicates that 90 percent of the sample companies have the propensity to report for specific CED item (represented by the value of 1). Meanwhile, a result of 0.30 in the value of 4 in CEDQ indicates that 30 percent of the sample companies have the propensity to report specific CED item in quantitative monetary terms (represented by the value of 4). Accordingly, as with CEDQty, Cameron and Trivedi (2010) suggested a binary logistic model for analysing the relationship between the propensity of the presence of CED item and its explanatory variables. In regard to the propensity for reporting CEDQ, as each of CED items is scored between 0 to 4, then an ordinal logistic model is utilised to empirically predict the relationship between the quality of CED item and its explanatory variables. As the CED index has 30 individual items, thus there are 30 separate binary logistic models and ordinal logistic models, respectively for each CED item. The model for a panel data logistic regression is outlined in Model 2.2 (see Section 4.6.2).

5.6.5 Robustness Test

The purpose of the robustness test is to assess whether the model is highly sensitive to the selected alternative measure of a variable. This thesis uses alternative measures to conduct robustness tests on the aggregate model of CEDQty and CEDQ (see Section 4.6.1). These alternative measures involve replacing nine variables in the original model with seven alternative measures. These alternative and original measures are: SIZE2 replaces SIZE; PRT2 replaces PRT; LEV2 replaces LEV; D_BS replaces BS; D_ID replaces ID; INST replaces GOVT and XGOVT; and CC replaces CHAIR and CEO. These alternative measurements are provided in Table 5-6. In addition, this thesis also includes the measurement of TWOWOB (a dummy variable that takes the value of 1 if there is at least two women directors on the board, and 0 if otherwise) in replacing WOB (the percentage of women directors on boards).

As there are many alternative measures, the first step in conducting the robustness test is by replacing the control variable SIZE with SIZE2 in the aggregate CEDQty and CEDQ in Model 1.1 (column 2, Table 7-8 and Table 7-9). The next step is by replacing financial performance variables PRT with PRT2 (column 3, Table 7-8 and Table 7-9), and LEV with LEV2 (column 4, Table 7-8 and Table 7-9). After this, the next step is replacing corporate governance variables of BS with D_BS (column 5, Table 7-8 and Table 7-9), ID with D_ID (column 6, Table 7-8 and Table 7-9), WOB with TWOWOB (column 7, Table 7-8 and Table 7-9), GOVT and XGOVT with INST (column 8, Table 7-8 and Table 7-9), and CHAIR and CEO with CC (column 9, Table 7-8 and Table 7-9). Once the panel data multivariate linear regression models for aggregate CEDQty and CEDQ are locked, then the preferred models run the regression in each six dimensions of CEDQty and CEDQ, as well as the individual CED items.

5.7 Summary

The current chapter explains the research methodology employed in this thesis by elaborating the data collection and data analysis procedures. In the data collection part, the discussion revolves around the sample selection and data sources for this thesis. Since this thesis uses content analysis as the technique for data collection, this chapter provides a detailed explanation of content analysis involving the development of the research instrument, validity and reliability of the research instrument, and coding process and reliability of the coding process. Additionally, this chapter also describes the definition and measurement of the variables used in this thesis.

Subsequent to the data collection part, this chapter elaborates the data analysis procedures required to test the framework of this thesis. For this reason, the analyses involve descriptive statistics and inferential statistics. In inferential statistics, the discussion includes correlation analysis, panel data multivariate linear regression, panel data multivariate logistic regression and robustness analysis. The results of the descriptive analysis are presented in Chapter 6, while the results of the inferential analysis are presented in Chapter 7.

CHAPTER 6:

DESCRIPTIVE RESULTS

6.1 Overview

In this chapter, 28 figures and nine tables present the descriptive results regarding the pattern of both corporate environmental disclosure quantity (CEDQty) and quality (CEDQ) practices of Malaysian companies in the utilities, energy and materials sectors between 2006 and 2014. These results are guided by the research methodology presented in Chapter 5 and address RO2 of examining whether the pattern of disclosure practices of aggregate CEDQty and CEDQ, and each of their disclosure dimensions have changed over time in the Malaysian institutional environment. This objective corresponds to the first three research questions presented in Section 1.2. First, what is the extent of CEDQty that Malaysian companies report in both their annual and sustainability reports? How have patterns of CEDQty differed between 2006, 2008 and 2014? Second, what is the extent of CEDQ that Malaysian companies report in both their annual and sustainability reports? How have patterns of CEDQ differed between 2006, 2008 and 2014? Third, what is the extent to which international and Malaysian guidelines have influenced CED by Malaysian companies? Detailed discussion of these results occurs in Chapter 8.

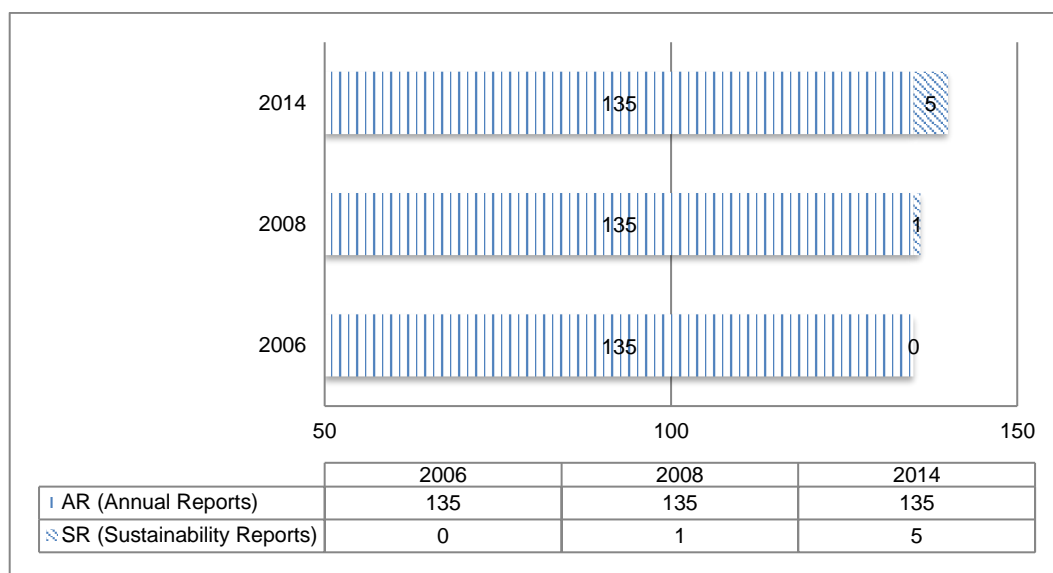
The remainder of this chapter is organised as follows: Section 6.2 presents changing patterns in the CED reporting medium of Malaysian companies from 2006 to 2014. Section 6.3 describes the overall score and scores by dimension of CEDQty and CEDQ in pooled years. Section 6.4 reports the changes of each of the overall score and scores by dimension of CEDQty and CEDQ from 2006 to 2014. Section 6.5 presents the changes of each of the overall score and scores by dimension of

CEDQty and CEDQ in each industry. Section 6.6 presents the changes in CEDQty and CEDQ content, based on individual items and distribution of international and Malaysian guidelines on CED. Section 6.7 provides consolidated key findings and the last Section 6.8 summarises the chapter.

6.2 Changes in CED Reporting Medium

In order to examine the CED behaviour of Malaysian listed companies in the utilities, energy and materials industry sectors between 2006 and 2014, it is necessary to understand the reporting medium used.

Figure 6-1: CED reporting medium in Malaysia (number of reports)



As indicated in Figure 6-1, all 135 companies in the study sample used annual reports (AR) as their main reporting medium for CED across the three reporting years (2006, 2008, and 2014), whereas almost none of them used sustainability reports (SR). There was no issuance of SR in 2006. In 2008, only 0.7 percent of companies (1 in 135) issued SR even though this year marked the implementation of *BM Main Market Listing Requirements* and the *BM CSR Framework*. Further, after seven years - following the implementation of these regulatory requirements by Bursa Malaysia, there was only an increase to 3.7 percent in the number of SR

(5 of 135 companies) in 2014. This finding reveals the inconsistent reporting medium in regard to the use of SR between Malaysian publicly-listed companies and the common practices globally. This is evidenced in the international survey by KPMG that shows 79% of the world's largest companies (G250) undertook SR in 2008 and it increased to 92% in 2015. Similarly, the largest (top 100) companies in countries of the survey also show an increasing trend for reporting in the SR: 45% in 2008 to 73% in 2015 (KPMG, 2008 pp. 13-14, 2015 pp. 30).

Although it might appear that Malaysian companies are lagging behind the contemporary world practices of reporting in the SR, the KPMG survey report in 2015 has shown that inclusion of corporate sustainability disclosure (including CED) in the AR is an established trend. This report shows that there was an increase of 52 percent in the use of AR to report CSD (2008: 4%, 2015: 56%) (KPMG, 2015, p. 36). This report also confirmed that Malaysia is not the only country that discloses corporate environmental information in the AR (99%). Other countries including the UK, France, Denmark, Norway, South Africa, India and Indonesia are among the countries with a high rate of CED reporting in the AR (between 82% to 100%) (KPMG, 2015, p. 37). This KPMG report explains that this move is mainly driven by both the increasing demand from shareholders in incorporating non-financial information with financial information, and the regulations of using AR as a reporting medium of CED in the stated countries. In regard to the latter, for example, both the Securities and Exchange Board of India and *India Companies Act 2013* imposed a mandatory requirement of reporting CSR activities in the AR of the Indian publicly listed companies effective from 2013. In the UK, quoted companies are required to report their GHG emissions in the AR as imposed in the *UK Companies Act 2006*. Thus, it may not be surprising that AR acts as an important medium for the reporting of CED.

To substantiate the reason for low reporting in SRs, this thesis provides a preliminary indication of CED via web disclosures of the sample companies (see Section 5.3). Of the ten companies selected at random, the results reveal that only three companies (Puncak Niaga, TNB and Ta Ann) made web disclosures. Notably,

while they have a dedicated page for CSD, only two companies have mentioned CED specifically. One of these two companies is TNB. During the web examination, although the current update should display the CED information of 2015 reporting year, it appears that the company furnished the CED information up to 2013 reporting year. The other company is Ta Ann. Despite the availability of some CED information in the company's web disclosure, timeliness of the data is questionable as the company did not clearly stated the reporting year. This result supports Zhang et al. (2007) who indicated that web disclosures are problematic due to the absence of "date stamping" of the presented data, resulting in difficulties to confirm whether the presented data reflects the current content of CED.

Table 6-1: CED reporting medium in Malaysia by industry (number of reports)

Reports	AR (Annual reports)			SR (Sustainability reports)		
Industry	Utilities	Energy	Materials	Utilities	Energy	Materials
2006	10	15	110	0	0	0
2008	10	15	110	1	0	0
2014	10	15	110	1	1	3
Total	30	45	330	2	1	3

Table 6-1 presents the analysis of the CED reporting medium by industry sector. This table reveals that the one company (0.7%) issuing a SR in 2008 (see Figure 6-1) came from the utilities industry. The remaining industries still used AR as their main CED reporting medium. It was not until 2014 that companies from the energy and materials industries issued SR and AR as their CED reporting medium. This is evidenced by the additional of one and three companies, respectively. Furthermore, companies from the utilities industry maintained their effort to report CED via SR (1 out of 10 companies).

Figure 6-2: CED incidences for the five companies using both AR and SR as a CED reporting medium

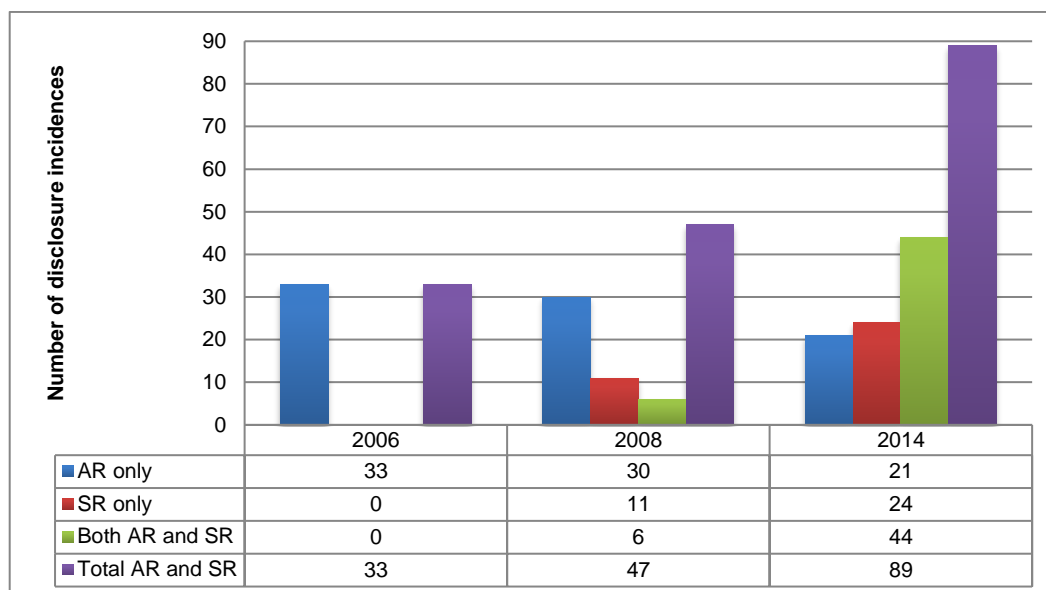


Figure 6-2 illustrates a comparison of CED incidence in both AR and SR of the abovementioned five sample companies that provided SR. The ‘total AR and SR’ of CED incidences inform non-duplicated disclosure sources from a combination of incidences reported in ‘AR only’, ‘SR only’, and ‘both AR and SR’. The ‘total AR and SR’ shows an overall increase for the three reporting years (2006, 2008, 2014). The number of CED incidences in ‘total AR and SR’ began at just 33 in 2006, rose moderately to 47 (or 42%) in 2008, and almost doubled to 89 (or 89%) in 2014. This increase was contributed by the variations of CED incidences reported in ‘AR only’, ‘SR only’, and ‘both AR and SR’ by the five companies.

Consistent with the exclusive use of AR as a CED reporting medium in 2006 (Figure 6-1), all five companies reported 33 incidences in ‘AR only’ during the year. However, when one company from the utilities industry started to publish and use SR as a supplementary CED reporting medium in 2008, the number of CED incidences in ‘AR only’ fell marginally to 30, whilst the ‘SR only’ climbed to 11, and ‘both AR and SR’ increased to 6.

Analysis on the percentage of change of CED incidences in 2014 shows that the ‘AR only’ further dropped to 21 (or 30%), ‘SR only’ rose rapidly to 24 (or 118%),

and ‘both AR and SR’ increased significantly to 44 (or 633%). These changes indicate that despite the lack of using SR as a CED reporting medium, SR complements AR. The growth of CED incidence in SR shows that using AR only for studies of CED would be misleading because companies that use AR are disclosing something else in the SR. Therefore, further growth in SR indicates studies using only AR will become less appropriate. Companies that used both AR and SR have demonstrated that both AR and SR are important reporting medium for CED even though the analysis involves five companies only.

6.3 CEDQty and CEDQ in Pooled Years

Although the main interest of this thesis is to look at the changes in CEDQty and CEDQ between 2006 and 2008, and 2008 and 2014, this section offers the descriptive statistics on the overall period (2006-2014), termed the ‘pooled years’. These data (Table 6-2 to 6-3) are presented here in order to provide a thorough analysis of both the overall scores and scores by dimension of CEDQty and CEDQ.

Table 6-2: Descriptive statistics CEDQty and CEDQ

Panel A: CEDQty overall score and scores by dimension									
Dependent variables	N	Mean	Median	SD	Min actual score	Max actual score	Max possible score	Average incidences/ item	
CEDQty	405	4.98	4	4.93	0	23	30	67 ^a	
CEDQty A	405	1.25	1	1.10	0	4	5	101	
CEDQty B	405	2.00	1	2.30	0	10	11	74	
CEDQty C	405	0.36	0	0.60	0	3	3	49	
CEDQty D	405	0.39	0	0.63	0	2	2	79	
CEDQty E	405	0.53	0	0.95	0	4	4	54	
CEDQty F	405	0.45	0	0.84	0	4	5	36	
Panel B: CEDQ overall score and scores by dimension									
Dependent variables	N	Mean	Median	SD	Min actual score	Max actual score	Max possible score	Average incidences / item	Average yearly score per company/ item
CEDQ	405	8.29	5	10.31	0	57	120	112 ^b	1.66 ^c
CEDQ A	405	1.56	1	1.66	0	9	20	126	1.25
CEDQ B	405	3.55	2	4.83	0	25	44	131	1.78
CEDQ C	405	0.83	0	1.70	0	11	12	112	2.31
CEDQ D	405	0.57	0	1.07	0	6	8	115	1.46
CEDQ E	405	1.00	0	2.06	0	11	16	101	1.89
CEDQ F	405	0.78	0	1.61	0	9	20	63	1.73

Notes:

1. (^a) $405 \times 4.98 / 30 = 67$ companies; 405=number of companies, 4.98=mean CEDQty, 30=number of items2. (^b) $405 \times 8.29 / 30 = 112$ companies; 405=number of companies, 8.29=mean CEDQ, 30=number of items3. (^c) $112 / 67 = 1.66$; 112=average companies per item of CEDQ, 67=average companies per item of CEDQty, 1.66=average yearly score per company per CEDQ item

4. CEDQty or CEDQ = Overall score; CEDQty A or CEDQ A = Environmental governance; CEDQty B or CEDQ B = Environmental actions and environmental performance indicators; CEDQty C or CEDQ C = Environmental expenditures; CEDQty D or CEDQ D = Environmental compliance and risk; CEDQty E or CEDQ E = Stakeholder engagement; CEDQty F or CEDQ F = Credibility

Table 6-2 provides a summary of the descriptive statistics of the pooled overall scores and scores by dimension for each CEDQty and CEDQ based on 405 company-year observations for the period between 2006 and 2014. Since the number of items in each dimension is unequal, this table also includes columns for: maximum possible score, average incidences per item and average yearly score per company per item.

In presenting the CEDQty pooled score, panel A shows that the CEDQty average score was 4.98 out of a maximum possible score of 30. When translated into the average incidences per item, the average number of companies reporting per item is only 67 companies (out of 405). From this 67 companies, each company reports on average five items (out of 30) across all the three reporting years. This low

average reporting per item indicates that companies may not have reported all items, instead were selective in reporting the CED items. Further, the score ranging between 0 and 23 indicates that there was a great variation in the CEDQty practices among the sample companies. Puncak Niaga Sdn Bhd (utilities industry) was the only company that had the maximum score of 23, achieved in 2014.

Detailed analyses of the CEDQty dimensions in the column ‘average incidences per item’ shows that CEDQty A was the most reported dimension (101), followed by CEDQty D (79), and CEDQty B (74). Conversely, CEDQty F was the least reported dimension (36), indicating that the sample companies were potentially disinclined to provide disclosure related to credibility of CED, which includes independent assurance of environmental disclosure. This is inconsistent with the global practices which showed a 9 percent increase (2005: 33%; 2015: 42%) in engagement of independent assurance for CSD among the top 100 companies in each of 45 countries (KPMG, 2015, p. 40).

Moreover, all the CEDQty dimensions show that each dimension has a minimum score of 0, indicating that at least one company in the sample featured non-disclosure of CEDQty by dimensions, which corroborates with non-disclosure companies in Section 6.4 (Figure 6-4). On the maximum actual score, only CEDQty C, CEDQty D and CEDQty E have reached the maximum possible score, indicating that at least one company in the sample disclosed all CED items in the respective dimensions. However, only Puncak Niaga Sdn Bhd received the maximum possible score in all three dimensions simultaneously.

Panel B shows that the CEDQ average score was only 8.29 out of a possible maximum score of 120. When translated into the average incidences per item, there was 112 incidences (out of 405) for each item. From this 112 incidences, each reported company had an average score of less than 2 (1.66) from the maximum possible score of 4 for each item, indicating that the CEDQ is low. In regard to variation in the CEDQ scores, the score ranging between 0 and 57 indicating that companies in the sample could have different CEDQ practices. Again, Puncak

Niaga Sdn Bhd (utilities industry) was the only company that had the maximum score of 57 achieved in 2014.

Of all the CEDQ dimensions in panel B, in the column titled ‘average yearly score per company per item’, CEDQ C had the highest reported score per item (2.31), followed by CEDQ E (1.89), and CEDQ B (1.78). However, CEDQ A was the lowest reported score per item (1.25). This supports that even though some companies were reporting CED, they were selective in the extent of their CED reporting.

Consistent with CEDQty practices, all the CEDQ dimensions also show that each dimension awarded a minimum score of 0, which means that at least one company in the sample has non-disclosures of CEDQ by dimensions. On the maximum actual score, notably none of the companies had reached the maximum possible score of CEDQ in all dimensions.

The overall scores and scores by dimension of both CEDQty and CEDQ reflect that the actual average scores for each disclosure were frequently lower than possible. This can be partly explained by the subsequent analysis by year in Section 6.4 (Figure 6-3 and Table 6-4) which shows the increase in CEDQty and CEDQ during the study period. This could be due to the growing awareness of CED by publicly listed companies in Malaysia. This result is consistent with the findings in CSD studies based in Malaysia (Haji, 2013a, 2013b; Sulaiman et al., 2014), and other studies in Australia (Frost, 2007), Portugal (Monteiro and Aibar-Guzmán, 2010), as well as in South Africa and Morocco (Khelif, Guidara, et al., 2015).

Table 6-3: Distribution of CEDQty and CEDQ by dimension over the years

Dimension	CEDQty	CEDQ
A	25%	19%
B	40%	43%
C	7%	10%
D	8%	7%
E	11%	12%
F	9%	9%
Total	100%	100%

With regard to CEDQty by dimension, Table 6-3 demonstrates that reporting on CEDQty B has the highest level of disclosure, representing 40 percent of the total CEDQty. This indicates that companies are using CEDQty B items to highlight their environmental practices and thus showing their environmental commitment and accountability to stakeholders. In contrast, CEDQty C had the smallest share of CEDQty (7%). This finding can be explained by the absence of information about environmental expenditures or the absence of tracking mechanisms for such expenditures. They are also partly explained by the number of items in each dimension.

Comparing the CEDQty results with the distribution of the CEDQ by dimension in the same table, it is apparent that again, the dimension B (CEDQ B) has the highest level of disclosure, representing 43 percent of the total CEDQ. This may signal that companies pay greatest attention to reporting such CED to emphasise their profound commitment to environmental practices to their stakeholders. Conversely, CEDQ D had the lowest proportion of the total CEDQ (7%). This result may be explained by the nature of disclosures related to compliance and risk assessment. While these disclosures require companies to assess their risk and monitor their compliance to avoid associated risks, perhaps this progress is less likely when an effective internal control systems for environmental management is absent. Again, the results are partly explained by the number of items in each dimension.

6.4 Changes in CEDQty and CEDQ by Years

Reports on the changing pattern of CEDQty and CEDQ between 2006, 2008 and 2014 are presented in Figure 6-3 to Figure 6-7, and Table 6-4 to Table 6-6.

Figure 6-3: Change in CEDQty and CEDQ (mean overall scores) from 2006 to 2014

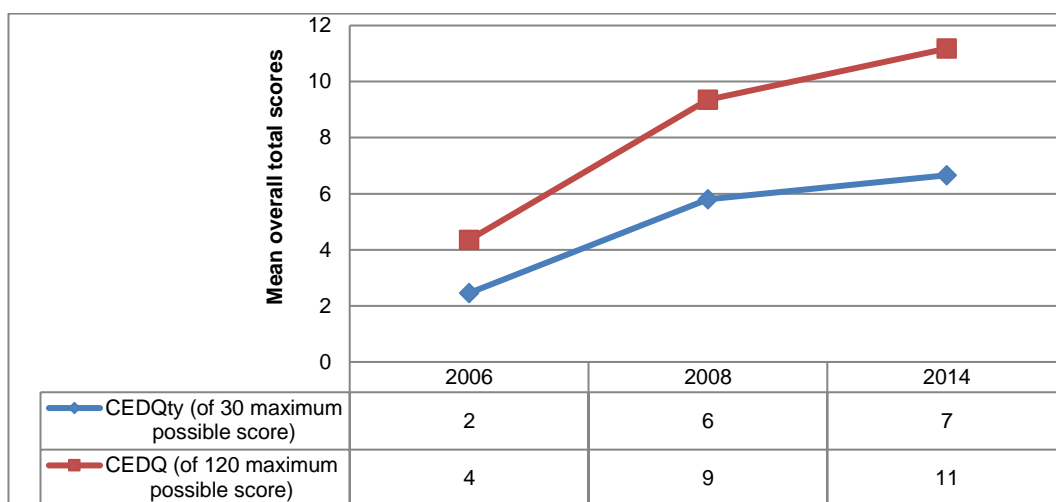


Figure 6-3 provides an analysis of mean overall scores for CEDQty and CEDQ for each year in 2006, 2008, and 2014. On average, the CEDQty overall score shows a rapid increase (200%) from 2 in 2006 to 6 in 2008. Even though this score tripled in 2008, it accounted for only about 20 percent of the maximum possible score. In 2014, the average CEDQty overall score rose marginally by 16 percent, and yet it is still far from the maximum possible score.

The same pattern appears in the average CEDQ overall score that shows an increase (125%) from 4 in 2006 to 9 in 2008. Although in 2014 this further increased by 22 percent, the percentage of change between 2008 and 2014 was rather small compared to the percentage of change between 2006 and 2008.

Table 6-4: Change in CEDQty and CEDQ in 2006, 2008 and 2014

Panel A: Mean overall scores and scores by dimension of CEDQty

	2006		2008		2014	
	Mean	% change	Mean	% change ^a	Mean	% change
CEDQty	2.47		5.81	135	6.66	15
CEDQty A	0.58		1.48	155	1.68	14
CEDQty B	0.92		2.33	153	2.73	17
CEDQty C	0.29		0.47	62	0.32	-32
CEDQty D	0.19		0.44	132	0.54	23
CEDQty E	0.28		0.63	125	0.68	8
CEDQty F	0.21		0.45	114	0.70	56

Panel B: Pairwise comparison of differences in mean^b overall scores and scores by dimension of CEDQty

	2006 vs 2008	2006 vs 2014	2008 vs 2014
CEDQty	5.98***	7.50***	1.52
CEDQty A	7.48***	9.14***	1.66
CEDQty B	5.35***	6.87***	1.51
CEDQty C	2.44**	0.41	-2.03
CEDQty D	3.39***	4.68***	1.30
CEDQty E	3.06***	3.51***	0.46
CEDQty F	2.47**	5.01***	2.54**

Panel C: Mean overall scores and scores by dimension of CEDQ

	2006		2008		2014	
	Mean	% change	Mean	% change ^a	Mean	% change
CEDQ	4.36		9.36	115	11.16	19
CEDQ A	0.75		1.84	145	2.10	14
CEDQ B	1.73		4.00	131	4.93	23
CEDQ C	0.69		1.02	48	0.77	-25
CEDQ D	0.30		0.66	120	0.74	12
CEDQ E	0.55		1.06	93	1.41	33
CEDQ F	0.35		0.78	123	1.22	56

Panel D: Pairwise comparison of differences in mean^b overall scores and scores by dimension of CEDQ

	2006 vs. 2008	2006 vs. 2014	2008 vs. 2014
CEDQ	4.14***	5.64***	1.50
CEDQ A	5.75***	7.12***	1.37
CEDQ B	4.01***	5.65***	1.63
CEDQ C	1.62	0.40	-1.22
CEDQ D	2.84**	3.47***	0.64
CEDQ E	2.06	3.46***	1.40
CEDQ F	2.24*	4.56***	2.32*

Significance level: * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$

Notes:

1. (°) Percentage of change: $(5.81 - 2.47)/2.47 = 135\%$; 5.81=mean 2008; 2.47=mean 2006.2. (°) t -value from the ANOVA Tukey post-hoc test of differences in means.

3. CEDQty or CEDQ = Overall score; CEDQty A or CEDQ A = Environmental governance; CEDQty B or CEDQ B = Environmental actions and environmental performance indicators; CEDQty C or CEDQ C = Environmental expenditures; CEDQty D or CEDQ D = Environmental compliance and risk; CEDQty E or CEDQ E = Stakeholder engagement; CEDQty F or CEDQ F = Credibility

Table 6-4 shows a yearly comparison of the change in CEDQty and CEDQ. In panel A, in support of a rapid increase in the average CEDQty overall score (Figure 6-3), almost all CEDQty by dimension showed a higher percentage of increase in average score between 2006 and 2008, compared to between 2008 and 2014. For example, in 2008, both CEDQty A and CEDQty B reported the highest increase of 155 percent and 153 percent of the average score. Compared to that of 2008, in 2014 the highest increase was reported in CEDQty F (56%), followed by CEDQty D (23%), while both CEDQty A and CEDQty B recorded a lower increase (14% and 17%). In 2014, CEDQty C showed a decreasing trend (-32%), in contrast to an increasing trend in 2008 (62%).

In panel B, the ANOVA Tukey post-hoc tests were used to assess whether the increasing or decreasing pattern in CEDQty significantly differs across the years. On the CEDQty overall score, there was a statistically significant (t -value=5.98, $p \leq 0.01$) difference in mean overall scores between 2006 and 2008. However, the differences in mean overall scores between 2008 and 2014 were not statistically significant (t -value=1.52, $p > 0.10$). Similar patterns are found for average CEDQty A to CEDQty F that show increases in the scores for all dimensions were statistically significant ($p \leq 0.01$ and $p \leq 0.05$) between 2006 and 2008. Conversely, the increases or decreases between 2008 and 2014 were not statistically significant except for the CEDQty F (t -value=2.54, $p \leq 0.05$). These results thus provide high support to H1.1a of a significant difference in CEDQty between 2006 and 2008, and concurrently limited support of H1.1b of a significant difference in CEDQty between 2008 and 2014.

Panel C complements Figure 6-3 by showing the mean overall score and scores by dimension of CEDQ. Consistent with CEDQty, all CEDQ by dimension reported a higher increase between 2006 and 2008, compared to a lower increase between 2008 and 2014. In 2008, the highest increase was reported in CEDQ A and CEDQ B (145% and 131%), while the lowest increase was recorded by CEDQ C and CEDQ E (48% and 93%). However, in 2014 the highest increase was reported in

CEDQ F (56%) and the lowest increase was recorded by CEDQ D (12%). As expected, CEDQ C showed a decreasing trend (-25%), consistent with CEDQty C.

Panel D compares the differences in the mean of CEDQ over the years. On the CEDQ overall score, there was a statistically significant increase between 2006 and 2008 (t -value=4.14, $p \leq 0.01$), but the increase between 2008 and 2014 was not statistically significant (t -value=1.50, $p > 0.10$). This is further evidenced in the majority of CEDQ by dimension which shows statistically significant ($p \leq 0.05$) increases in the scores between 2006 and 2008, except for CEDQ C (t -value=1.62, $p > 0.10$) and CEDQ E (t -value=2.06, $p > 0.10$). In contrast, the increases or decreases between 2008 and 2014 were not statistically significant except for the CEDQ F (t -value=2.32, $p \leq 0.10$). These results thus support H1.2a of a significant difference in CEDQ between 2006 and 2008, and concurrently limited support of H1.2b of a significant difference in CEDQ between 2008 and 2014.

Overall, these results suggest that even though the CEDQty and CEDQ in Malaysia are still low, there is a significant increase in both CEDQty and CEDQ between 2006 and 2008, compared to the reporting between 2008 and 2014.

Figure 6-4: Change in CEDQty overall score from 2006 to 2014

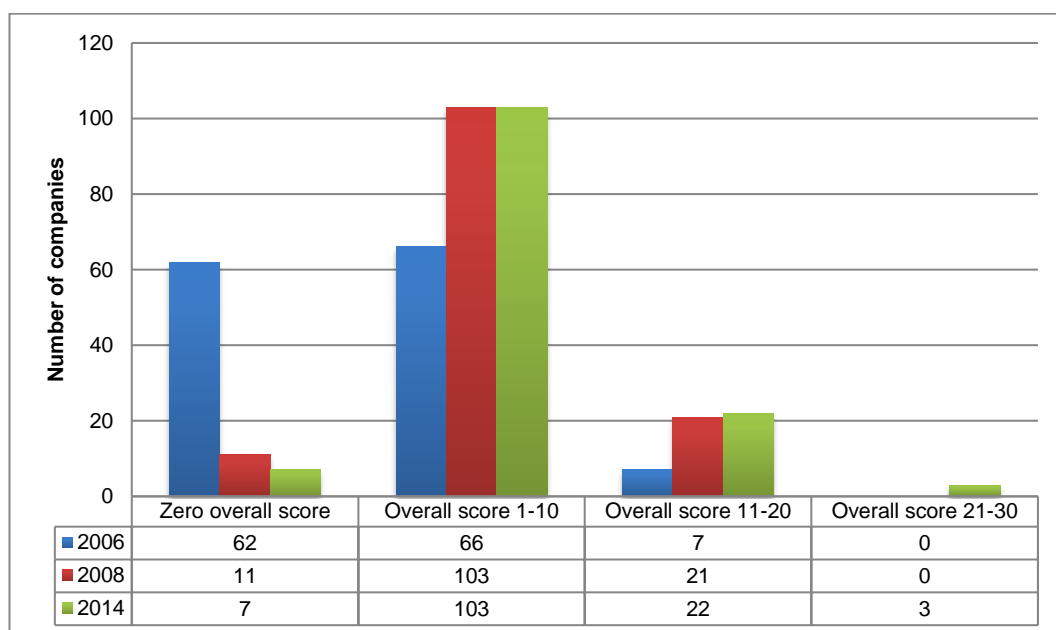


Figure 6-4 shows the change in CEDQty overall score from 2006 to 2014. In 2006, 46 percent (or 62) sample companies did not provide CED. Of the 54 percent sample companies that provided CED, 66 companies had a CEDQty overall score below 11 (out of 30 items) and only 7 companies (5%) had a CEDQty overall score between 11 and 20 while none of these companies reached a CEDQty overall score between 21 and 30. Puncak Niaga Holdings Bhd (Puncak Niaga) and Ta Ann Holdings Bhd (Ta Ann) were among the sample companies that had the highest CEDQty overall score of 20 for 2006. Since their CEDQty overall scores present them as the top scorers of CED items, these two companies can be considered as the leaders of corporate environmental disclosure in their respective industries in Malaysia.

Detailed analyses reveal that both are large companies from the utilities industry (Puncak Niaga) and the materials industry (Ta Ann). Although both were audited by ‘big four’⁴⁹ audit firms (Ernst & Young, and KPMG, respectively), Puncak Niaga only operated within the Malaysian market while Ta Ann had overseas operations. Both companies have a clear vision or mission indicating their responsibility to the environment. For example, Puncak Niaga’s AR 2006 contains a clear vision of the company’s health, safety and environment as follows:

As a provider of essential drinking water, we recognise the responsible role we play in society and in the protection and improvement of our environment. (Annual Report 2006 Puncak Niaga Holdings Bhd, 2006, p. 67)

Puncak Niaga further elaborated how the company translated the above vision into action:

In order to contribute effectively to sustainable development, we have a responsibility to act as diligent stewards of the natural environment. We do this by focusing on mitigating the harmful environmental impacts of our business activities and enhancing biodiversity at our sites. This not only strengthens our

⁴⁹ Big four audit firms refer to Deloitte, KPMG, Ernst & Young, and PricewaterhouseCoopers (PwC).

relationship with society, but demonstrates our commitment to environmental excellence.

We work in close collaboration with the Department of Environment (DOE), Jabatan Kawal Selia Air Selangor (JKAS), Lembaga Urus Air Selangor (LUAS) and the relevant authorities at the State and Federal level, in ensuring environmental care. (Annual Report 2006 Puncak Niaga Holdings Bhd, 2006, p. 67).

Similarly, Ta Ann's AR 2006 indicates the company's strong commitment to the environment in the mission statement as follows:

Through planting trees and stringent forest resource management, we establish a sustainable resource base for producing price competitive quality products that are eco-friendly so as to deliver exceptional value to our customers and stakeholders. (Annual Report 2006 Ta Ann Holdings Bhd, 2006, p. 1).

Ta Ann interpreted the above mission by reporting on its environmental management system that adhered to ISO 14001, PEFC (Programme for Endorsement for Forest Certification), CE Marking System Certification (a certification system for compliance with European product safety, health and environmental requirements) and JAS Certification (a certification system for compliance with Japanese Agricultural Standards product safety, health and environmental requirements).

In 2008, one year after the implementation of *BM MM Listing Requirement* and *BM CSR Framework* took effect in 2007, the number of sample companies without CED dropped significantly to 11 (-82%). Of the eleven companies, two companies were from the energy industry, and the remainder were from the materials industry. With respect to the disclosing companies, while there was an increase in the number of companies with a CEDQty overall score between 1 and 10 (56% or 37 companies) and a CEDQty overall score between 11 and 20 (200% or 14 companies), none of the sample companies had a CEDQty overall score of above 20. Of the additional 14 companies with a CEDQty overall score between 11 and 20 in 2008, Tenaga

Nasional Berhad (Tenaga) from the utilities industry was the only company that had the highest CEDQty overall score of 20. Tenaga showed a rapid growth of CEDQty overall score in 2008, compared to its score of 7 in 2006. Similarly, 13 out of these 14 companies show an increasing pattern of CEDQty overall score; from zero and below 11 in 2006 to above 10 in 2008. The overall changes from non-disclosure to disclosure and the rapid movement of CEDQty overall score were consistent with the impact of institutional changes between 2006 and 2008.

In 2014, the number of sample companies without CED continued to drop to seven companies. All these companies are in the materials industry. In regard to disclosing companies, while the number of companies with a CEDQty overall score below 21 was maintained as in 2008, notably the number of companies with a CEDQty overall score of above 20 had increased to three. The three companies were Puncak Niaga (utilities industry), Ta Ann (materials industry), and Petronas Dagangan Bhd (energy industry). The CEDQty overall scores for both Puncak Niaga and Ta Ann had increased slowly to reach 23 and 22 in 2014, compared to 18 and 14 in 2008, respectively. In contrast, the CEDQty overall score of Petronas Dagangan Bhd had showed a significant increase from 4 in 2008 to 21 in 2014. Among these companies, only Petronas Dagangan Bhd utilised AR and SR as the reporting medium for CED.

Figure 6-5: Change in CEDQ overall score from 2006 to 2014

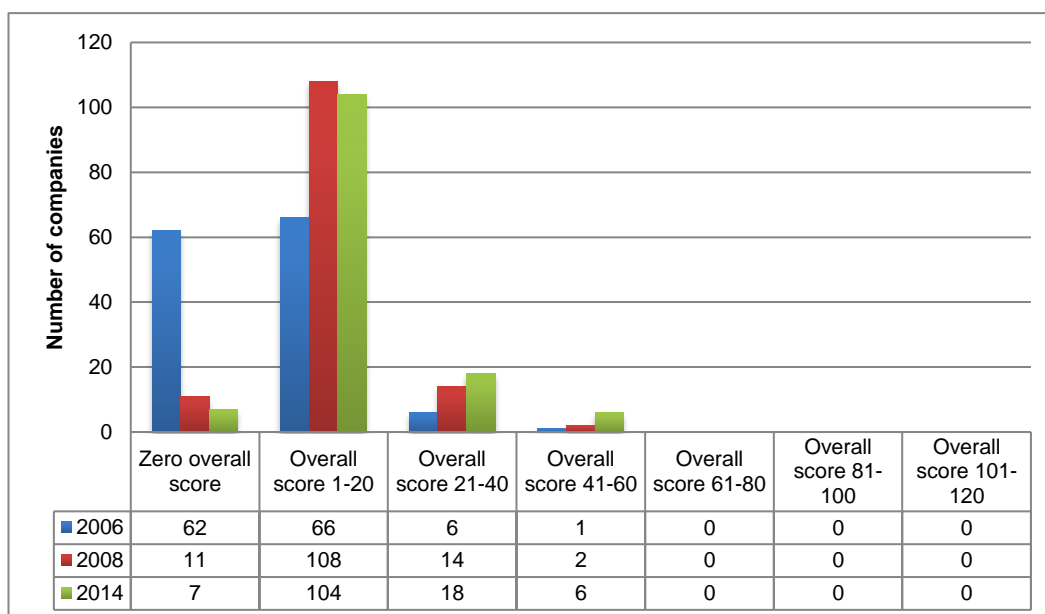


Figure 6-5 reports the change in the CEDQ overall score over the reporting years 2006, 2008, and 2014. In 2006, 73 sample companies provided CEDQ. Of this 73 companies, 49 percent (or 66 companies) had a CEDQ overall score of less than 20 (out of 120 maximum score), 4 percent (or 6 companies) had a CEDQ overall score between 21 and 40, and only one company had a CEDQ overall score between 41 and 60. None of the companies had a CEDQ overall score of above 61.

Puncak Niaga had the highest CEDQ overall score of 44. This is consistent with the company being the highest scorer of CEDQ in 2006. A similar pattern follows for six companies that scored CEDQ between 11 and 20; their CEDQ overall scores between 21 and 40 were the second highest scores. Of these six companies, three companies are in the utilities industry (PBA Holdings Bhd, Petronas Gas Bhd, and YTL Corporation Berhad), one company is in the energy industry (Shell Refining Company (Federation of Malaya) Berhad), and two companies are in the materials industry (Ta Ann, and Golden Pharos Bhd). Further analysis indicates that five of these companies were audited by big four audit firms (Ernst & Young, KPMG, and PwC) and one engaged a non-big four audit firm. While two companies were

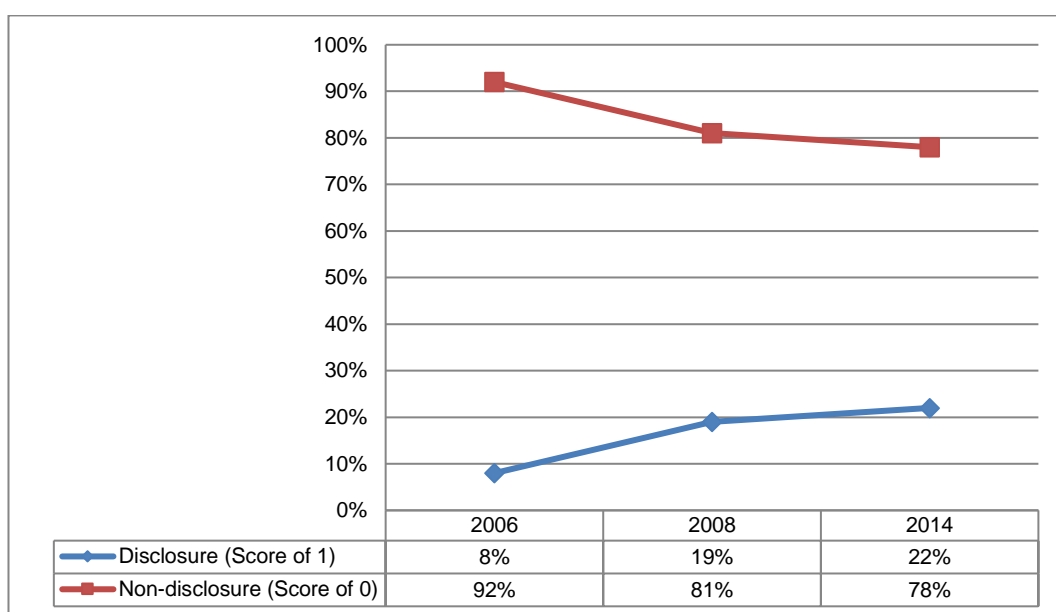
involved in the Malaysian operations only, the rest of the companies had international operations.

In 2008, as the number of disclosing companies increased tremendously, the number of companies with a CEDQ overall score below 41 also increased by 50 (69%) from 66 companies in 2006. While none of the sample companies had a score above the mean possible score, two companies scored CEDQ between 41 and 60. These two companies were Tenaga Nasional Bhd and YTL Corporation Bhd (YTL Corp). Consistent with its CEDQ overall score, Tenaga had showed a rapid change of CEDQ overall score from 17 in 2006 to 44 in 2008. Meanwhile, YTL Corp's CEDQ overall score had increased from 27 in 2006 to 44 in 2008. Again, the drastic shift in CEDQ overall score between 2006 and 2008 suggests that institutional changes between these periods may have possible impact on the way companies in Malaysia responded to CEDQ.

In 2014, whereas the number of sample companies with a CEDQ overall score between 1 and 41 continued to stay at 122 companies, the number of companies with a CEDQ overall score between 41 and 60 had increased to six companies. Of these six companies, Puncak Niaga and YTL Corp are in the utilities industry, Petronas Dagangan Berhad is in the energy industry, while three companies are in the materials industry (CSC Steel Holdings Bhd, Lafarge Malaysia Berhad, and Ta Ann). Puncak Niaga had the highest CEDQ of 57, but it was still well below the mean possible score. The CEDQ overall score for CSC Steel Holdings Bhd, Lafarge Malaysia Berhad, and Petronas Dagangan Berhad had increased significantly from the range between 1 and 20 in 2008 to the range between 41 and 60. For Puncak Niaga and Ta Ann, there was a steady growth from the range between 21 and 40 in 2008, to scores of 57 and 46 in 2014, respectively. Only YTL Corp remained in the range between 41 and 60 in both years even though the company scored 51 in 2014, compared to 44 in 2008. Notably, similar to 2006 and 2008, none of the sample companies scored CEDQ above 61. Among these six companies, four companies provided CEDQ both in AR and SR.

Subsequent to this preceding analysis of overall and dimension scores, the forthcoming analysis presents the reporting of CEDQty and CEDQ at the individual item level. Figure 6-6 and Table 6-5 show the change in percentage, and change in number of incidences of CEDQty scoring scale over time for 30 CED items in the disclosure index. Figure 6-7 and Table 6-6 demonstrate the change in percentage, and change in number of incidences of CEDQ scoring scale over time.

Figure 6-6: Change in percentage of CEDQty scoring scale from 2006 to 2014



In Figure 6-6 and Table 6-5, there are two scoring scales of CEDQty. A score of 1 indicates the presence or disclosure of CED incidence, and a score of 0 indicates the absence or non-disclosure of CED incidence. Figure 6-6 shows on overall, there was a much higher non-disclosure of CEDQty incidences compared to the disclosure of CEDQty incidence over the period given. From the total maximum possible incidences per year of 4,050 (derived from 30 items x 135 companies), the average disclosure incidences of CEDQty accounted for only 672 incidences over the years (Table 6-5).

In 2006, the disclosure of CEDQty incidences was only eight percent, whereas 92 percent came from non-disclosure of CEDQty incidences (Figure 6-6). The eight percent is represented by a total 333 CED incidences (Table 6-5). Of this, the

highest incidence was reported by the A1 item (a statement on commitment to the protection of the environment) with 38 companies reporting this item. Meanwhile, there were no incidences reported for the B9 (other remediation efforts) and F1 (independent assurance of environmental disclosures) items. In terms of dimension, on average, CEDQty A was the most reported incidences (16 companies per item), while CEDQty F was the lowest reported incidences (6 companies per item).

In 2008, the non-disclosure of CEDQty incidences dropped by 11 percent (Figure 6-6). In contrast, the disclosure of CEDQty incidences increased to 19 percent and this is represented by 784 CED incidences (Table 6-5). Within this disclosure of CEDQty incidences, there was a rapid and substantial growth of 11 percent from 2006 to 2008. Again, the highest incidence was reported by the A1 item (a statement on commitment to the protection of the environment) with 111 companies reporting this item and there was no incidence for the B9 item (other remediation efforts). Further analysis demonstrates that CEDQty A again, showed the highest average incidences (40 companies per item), compared to the remaining five dimensions. The lowest incidences was again exhibited in CEDQty F (12 companies per item).

In 2014, the non-disclosure of CEDQty incidences continued to drop to 78 percent, compared to the disclosure of CEDQty incidences which grew progressively to 22 percent (Figure 6-6). Of this 22 percent, the number of CEDQty incidences increased to 899 (or 3%) (Table 6-5). Among these, the A1 item continued to be the highest incidence reported and the B9 item remained the unreported item. Referring to dimensions, on average, CEDQty A and CEDQty B were the most reported incidences (45 and 34 companies per item). Conversely, CEDQty C exhibited the lowest incidences (14 companies per item), compared to 21 companies per item in 2008.

Overall, these results indicate that between 2006 and 2014, the sample companies continued to favour disclosure on CEDQty A (environmental governance: 25%) and CEDQty B (environmental actions and environmental performance indicators: 18%) when they responded to CED, whereas other CEDQty dimensions were

considered less important. Thus, this explains the notably low mean overall scores of the respective CEDQty dimensions.

Figure 6-7: Change in percentage of CEDQ scoring scale from 2006 to 2014

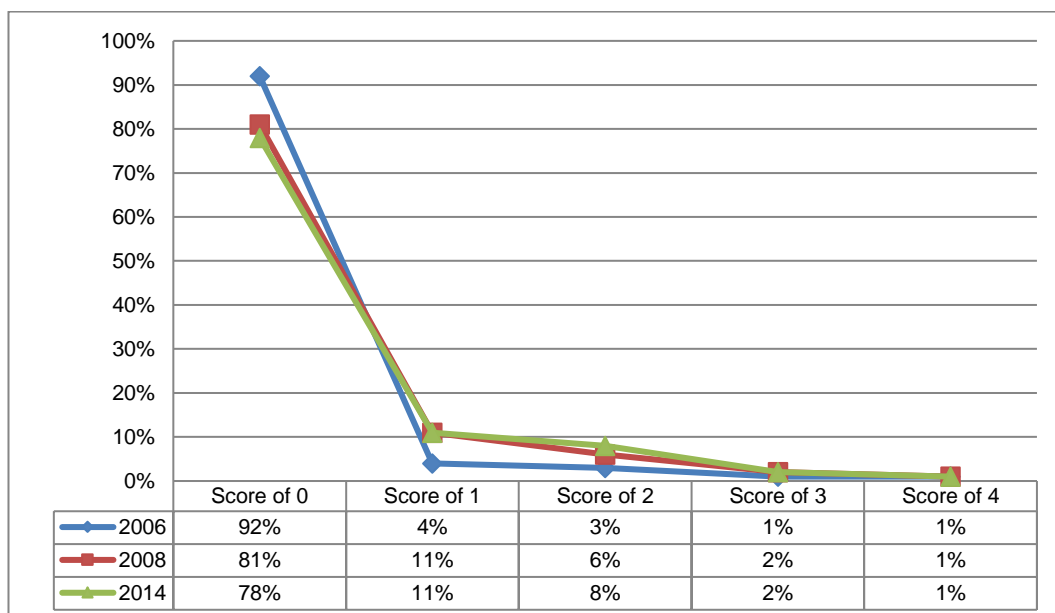


Figure 6-7 depicts that there are five scoring scales of CEDQ: a score of 0 indicates the non-disclosure of CED, a score of 1 indicates a brief qualitative CED, a score of 2 indicates a detailed qualitative CED, a score of 3 indicates a quantitative non-monetary CED, and a score of 4 indicates a quantitative monetary CED. Based on this, these scores are grouped into non-disclosure of CEDQ (score of 0), the presence of CEDQ qualitative incidences (score of 1 and 2), and the presence of CEDQ quantitative incidences (score of 3 and 4).

Overall, the improvement in the CEDQ qualitative and quantitative incidences were doubled. This can be seen from changes in the ‘score of 1’ to ‘score of 4’ for each year and changes in each category of score from 2006 to 2014. The major increase in reporting from 2006 to 2008 was heavily weighted to ‘score of 1’, indicating that companies had shifted from non-reporters to reporters of CED although they only reported qualitative incidences. Meanwhile, the major increase in reporting from 2008 to 2014 was heavily weighted to ‘score of 2’. Again, this shows an increase

in the CEDQ qualitative incidences when the information is more detailed than the 'score of 1'.

Further analysis in Table 6-6 displays from the total maximum incidences per year of 4,050, the average disclosure incidences of CEDQ qualitative accounted for 578 incidences, while CEDQ quantitative represents an average of 94 incidences over the years. On average, CEDQ A reported the most highest CEDQ qualitative incidences per year (33 companies) while CEDQ C had the highest CEDQ quantitative incidences per year (7 companies), compared to other CEDQ dimensions.

In 2006, the CEDQ qualitative incidences accounted for nearly seven percent, whereas the CEDQ quantitative incidences accounted for almost two percent (Figure 6-7). The seven percent CEDQ qualitative are represented by 273 incidences (column scoring value 1-2, Table 6-6). Of this, the highest incidence was reported by the A1 item (a statement on commitment to the protection of the environment) with 38 companies reporting for this item. There were no incidence reported for the B9 (other remediation efforts), C3 (financing for investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency) and F1 (independent assurance of environmental disclosures) items during 2006.

Meanwhile, the two percent of CEDQ quantitative incidences are represented by 60 CED incidences (column scoring value 3-4, Table 6-6). The highest disclosure item for this type of incidence came from the C1 item (investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency) reported by 10 companies.

In 2008, there was an upward movement in the presence of CEDQ incidences in contrast to the non-disclosure of CEDQ incidences. Both of the CEDQ incidences demonstrated a substantial increase. CEDQ qualitative shifted from nearly seven percent to seventeen percent, and CEDQ quantitative increased from almost two percent to three percent (Figure 6-7). For CEDQ qualitative incidences, the

seventeen percent is accounted by 689 incidences which represent a growth of ten percent from 2006 (Table 6-6). Again, the A1 item represented the highest CEDQ qualitative incidence reported by 111 companies while there was no incidence reported by the B9 item.

For CEDQ quantitative incidences, the three percent is equivalent to 95 incidences (Table 6-6). The C1 item continued to be highest reported item for the CEDQ quantitative incidences with 14 companies reporting for this item.

In 2014, while the CEDQ qualitative incidences increased gradually to 19 percent, the CEDQ quantitative incidences stood at three percent (Figure 6-7). For the change in the number of CED incidences, the 19 percent CEDQ qualitative incidences are equivalent to 772 incidences (or 2% increase, Table 6-6). Of these CEDQ qualitative incidences, the A1 item continued to be the highest incidence reported (119 companies). There were no reported incidences for the B9 and C3 items.

Meanwhile, the three percent CEDQ quantitative incidences are represented by 127 incidences (or 0.8% increase, Table 6-6). Of these CEDQ quantitative incidences, the highest incidence came from the B4 item (energy consumption and efficiency) with 14 companies reporting this item.

Altogether, it can be seen from the result that companies in the sample preferred to report CEDQ qualitative incidences than quantitative incidences. Further, the results suggest that the increases in both the CEDQ qualitative and quantitative incidences derived mainly from the shift of CEDQ non-disclosure to CEDQ disclosure. Although there was a very small improvement in CEDQ quantitative incidences, the above results emphasise the increasing move towards quantitative CED and demonstrate that Malaysian companies in the sample are very selective in determining and reporting their CEDQ.

In summary, the descriptive analyses in this section demonstrate that there are sufficient forces of institutional changes in improving both CEDQty and CEDQ

(ANOVA Tukey post-hoc tests were used). However, the magnitude of institutional forces on both the CEDQty and CEDQ after controlling for changes in company characteristics is yet to be confirmed through the multivariate analyses.

Table 6-5: Change in the number of incidences of CEDQty scoring scale in 2006, 2008 and 2014

	Year	CEDQty				
		2006	2008	2014	Average incidences or companies disclosed/year	
No	Items / Scoring scale	1	1	1	1	%
A	Environmental governance					
A1	A statement on commitment to the protection of the environment	38	111	119	89	13
A2	A statement about a company's environmental management system	22	39	33	31	5
A3	Board and/or; committee and/or; department and/or officers of environmental management	14	20	33	22	3
A4	Stakeholder involvement in setting a company's environmental policy and/or environmental disclosure process	1	1	2	1	0
A5	Board and/or employee training in relation to environmental management practices	3	29	40	24	4
	<i>Subtotal CED incidences (of the maximum 675⁵⁰ incidences)</i>	<i>78</i>	<i>200</i>	<i>227</i>	<i>168</i>	<i>25</i>
	<i>Percentage of disclosed CED incidences (of the maximum incidences)</i>	<i>12%</i>	<i>30%</i>	<i>34%</i>	<i>25%</i>	
	<i>Average incidences or companies disclosed/item</i>	<i>16</i>	<i>40</i>	<i>45</i>	<i>34</i>	
B	Environmental actions and environmental performance indicators					
B1	Air emissions and management	16	38	44	33	5
B2	Solid waste and effluent (to inland waters and into Malaysian waters) generation and management	18	70	64	51	8
B3	Water consumption and efficiency	10	25	32	22	3
B4	Energy consumption and efficiency	16	39	56	37	6
B5	Materials consumption and efficiency	17	35	36	29	4
B6	Noise and odour pollution	4	9	10	8	1
B7	Biodiversity conservation	11	19	23	18	3
B8	Land remediation, contamination or degradation	7	9	10	9	1
B9	Other remediation efforts [not covered from B1 to B8]	0	0	0	0	0

⁵⁰ Derived from 135 companies x number of items in the dimension; e.g. 135 companies x 5 items = 675 incidences

Table 6-5: Change in the number of incidences of CEDQty scoring scale in 2006, 2008 and 2014 (continued)

	Year	2006	2008	2014	Average incidences or companies disclosed/year	
No	Items / Scoring scale	1	1	1	1	%
B	Environmental actions and environmental performance indicators (continued)					
B10	Recycling/ reuse / reduce	8	39	55	34	5
B11	Products / services responsibility	17	32	39	29	4
	<i>Subtotal CED incidences (of the maximum 1,485 incidences)</i>	<i>124</i>	<i>315</i>	<i>369</i>	<i>269</i>	<i>40</i>
	<i>Percentage of disclosed CED incidences (of the maximum incidences)</i>	<i>8%</i>	<i>21%</i>	<i>25%</i>	<i>18%</i>	
	<i>Average incidences or companies disclosed/item</i>	<i>11</i>	<i>29</i>	<i>34</i>	<i>24</i>	
C	Environmental expenditures					
C1	Investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency	29	46	29	35	5
C2	Operating costs of assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency	7	13	9	10	1
C3	Financing for investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency	3	4	5	4	1
	<i>Subtotal CED incidences (of the maximum 405 incidences)</i>	<i>39</i>	<i>63</i>	<i>43</i>	<i>48</i>	<i>7</i>
	<i>Percentage of disclosed CED incidences (of the maximum incidences)</i>	<i>10%</i>	<i>16%</i>	<i>11%</i>	<i>12%</i>	
	<i>Average incidences or companies disclosed/item</i>	<i>13</i>	<i>21</i>	<i>14</i>	<i>16</i>	
D	Environmental compliance and risk					
D1	Environmental compliance status of relevant laws and guidelines	15	47	53	38	6
D2	Environmental risk assessments	11	13	20	15	2
	<i>Subtotal CED incidences (of the maximum 270 incidences)</i>	<i>26</i>	<i>60</i>	<i>73</i>	<i>53</i>	<i>8</i>
	<i>Percentage of disclosed CED incidences (of the maximum incidences)</i>	<i>10%</i>	<i>22%</i>	<i>27%</i>	<i>20%</i>	
	<i>Average incidences or companies disclosed/item</i>	<i>13</i>	<i>30</i>	<i>37</i>	<i>27</i>	
E	Stakeholder engagement					
E1	Employee environmental engagement programs within company	5	20	20	15	2

Table 6-5: Change in the number of incidences of CEDQty scoring scale in 2006, 2008 and 2014 (continued)

	Year	2006	2008	2014	Average incidences or companies disclosed/year	
No	Items / Scoring scale	1	1	1	1	%
E	Stakeholder engagement (continued)					
E2	Community outreach programs	11	22	20	18	3
E3	Donation and/or partnership with environmental organisation /external parties in relation to environmental campaign/practices	14	23	31	23	3
E4	Engagement in supply chains in relation to products/services produced/offered	8	20	21	16	2
	<i>Subtotal CED incidences (of the maximum 540 incidences)</i>	38	85	92	72	11
	<i>Percentage of disclosed CED incidences (of the maximum incidences)</i>	7%	16%	17%	13%	
	<i>Average incidences or companies disclosed/item</i>	10	21	23	18	
F	Credibility					
F1	Independent assurance of environmental disclosure	0	0	0	0	0
F2	Certification of environmental related standards	14	34	45	31	5
F3	Environmental auditing	3	11	13	9	1
F4	Products certification with respect to environmental impact	5	9	23	12	2
F5	Awards	6	7	14	9	1
	<i>Subtotal CED incidences (of the maximum 675 incidences)</i>	28	61	95	61	9
	<i>Percentage of disclosed CED incidences (of the maximum incidences)</i>	4%	9%	14%	9%	
	<i>Average incidences or companies disclosed/item</i>	6	12	19	12	
	Total CED incidences (of the maximum 4,050 incidences)	333	784	899	672	100
	Percentage of disclosed CED incidences (of the maximum incidences)	8%	19%	22%	17%	
	Percentage change based on absolute growth in total CED incidences	-	11%	3%		
	Average incidences or companies disclosed/item (of 30 items)⁵¹	11	26	30	22	
	Average item/company (of 135 companies)⁵²	2.5	5.8	6.7	5	

⁵¹ Average incidences or companies disclosed /item = CED incidences / number of items; eg: 333 incidences by 135 companies / 30 items = 11 incidences or companies per item

⁵² Average items /company = CED incidences / number of companies; eg: 333 incidences / 135 companies = 2.5 items per company

Table 6-6: Change in the number of incidences of CEDQ scoring scale in 2006, 2008 and 2014

	Year	CEDQ									
		2006		2008		2014		Average incidences or companies disclosed/year			
No	Items / Scoring scale	1-2	3-4	1-2	3-4	1-2	3-4	1-2	%	3-4	%
A	Environmental governance										
A1	A statement on commitment to the protection of the environment	38	0	111	0	119	0	89	15	0	0
A2	A statement about a company's environmental management system	20	2	37	2	32	1	30	5	1.7	2
A3	Board and/or; committee and/or; department and/or officers of environmental management	14	0	20	0	32	1	22	4	0.3	0
A4	Stakeholder involvement in setting a company's environmental policy and/or environmental disclosure process	1	0	1	0	2	0	1	0	0	0
A5	Board and/or employee training in relation to environmental management practices	3	0	29	0	38	2	23	4	0.7	1
	<i>Subtotal CED incidences (of 675 incidences)</i>	76	2	198	2	223	4	166	29	2.7	3
	<i>Percentage of disclosed CED incidences (of 675 incidences)</i>	11%	0.3%	29%	0.3%	33%	0.6%	25%		0.4%	
	<i>Average incidences or companies disclosed/item</i>	15	0.4	40	0.4	44	0.8	33		0.5	
B	Environmental actions and environmental performance indicators										
B1	Air emissions and management	12	4	34	4	34	10	27	5	6	6
B2	Solid waste and effluent (to inland waters and into Malaysian waters) generation and management	14	4	61	9	54	10	43	7	7.7	8
B3	Water consumption and efficiency	5	5	18	7	22	10	15	3	7.3	8
B4	Energy consumption and efficiency	11	5	30	9	42	14	28	5	9.3	10
B5	Materials consumption and efficiency	17	0	31	4	32	4	27	5	2.7	3
B6	Noise and odour pollution	4	0	9	0	10	0	8	1	0	0
B7	Biodiversity conservation	9	2	15	4	15	8	13	2	4.7	5
B8	Land remediation, contamination or degradation	2	5	4	5	4	6	3	1	5.3	6
B9	Other remediation efforts [not covered from B1 to B8]	0	0	0	0	0	0	0	0	0	0
B10	Recycling/ reuse / reduce	7	1	36	3	50	5	31	5	3	3

Table 6-6: Change in the number of incidences of CEDQ scoring scale in 2006, 2008 and 2014 (continued)

	Year	2006		2008		2014		Average incidences or companies disclosed/year			
No	Items / Scoring scale	1-2	3-4	1-2	3-4	1-2	3-4	1-2	%	3-4	%
B	Environmental actions and environmental performance indicators (continued)										
B11	Products / services responsibility	14	3	25	7	36	3	25	4	4.3	5
	<i>Subtotal CED incidences (of 1,485 incidences)</i>	95	29	263	52	299	70	219	38	50.3	54
	<i>Percentage of disclosed CED incidences (of 1,485 incidences)</i>	6%	2.0%	18%	3.5%	20%	4.7%	15%		3.4%	
	<i>Average incidences or companies disclosed/item</i>	8	2.6	24	4.7	27	6.4	20		4.5	
C	Environmental expenditures										
C1	Investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency	19	10	32	14	17	12	23	4	12	13
C2	Operating costs of assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency	3	4	7	6	6	3	5	1	4.3	5
C3	Financing for investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency	0	3	2	2	0	5	1	0	3.3	4
	<i>Subtotal CED incidences (of 405 incidences)</i>	22	17	41	22	23	20	29	5	19.7	21
	<i>Percentage of disclosed CED incidences (of 405 incidences)</i>	5%	4.2%	10%	5.4%	6%	4.9%	7%		4.9%	
	<i>Average incidences or companies disclosed/item</i>	7	5.7	14	7.3	7	6.7	9		6.7	
D	Environmental compliance and risk										
D1	Environmental compliance status of relevant laws and guidelines	13	2	44	3	51	2	36	6	2.3	2
D2	Environmental risk assessments	11	0	12	1	17	3	13	2	1.3	1
	<i>Subtotal CED incidences (of 270 incidences)</i>	24	2	56	4	68	5	49	9	3.7	4
	<i>Percentage of disclosed CED incidences (of 270 incidences)</i>	9%	0.7%	21%	1.5%	25%	1.9%	18%		1.5%	
	<i>Average incidences or companies disclosed/item</i>	12	1	28	2	34	2.5	25		2	
E	Stakeholder engagement										
E1	Employee environmental engagement programs within company	5	0	19	1	19	1	14	2	0.7	1

Table 6-6: Change in the number of incidences of CEDQ scoring scale in 2006, 2008 and 2014 (continued)

	Year	2006		2008		2014		Average incidences or companies disclosed/year			
No	Items / Scoring scale	1-2	3-4	1-2	3-4	1-2	3-4	1-2	%	3-4	%
E	Stakeholder engagement (continued)										
E2	Community outreach programs	7	4	19	3	11	9	12	2	5.3	6
E3	Donation and/or partnership with environmental organisation /external parties in relation to environmental campaign/practices	12	2	20	3	23	8	18	3	4.3	5
E4	Engagement in supply chains in relation to products/services produced/offered	7	1	17	3	18	3	14	2	2.3	2
	<i>Subtotal CED incidences (of 540 incidences)</i>	<i>31</i>	<i>7</i>	<i>75</i>	<i>10</i>	<i>71</i>	<i>21</i>	<i>59</i>	<i>10</i>	<i>12.7</i>	<i>13</i>
	<i>Percentage of disclosed CED incidences (of 540 incidences)</i>	<i>6%</i>	<i>1.3%</i>	<i>14%</i>	<i>1.9%</i>	<i>13%</i>	<i>3.9%</i>	<i>11%</i>		<i>2.4%</i>	
	<i>Average incidences or companies disclosed/item</i>	<i>8</i>	<i>1.8</i>	<i>19</i>	<i>2.5</i>	<i>18</i>	<i>5.3</i>	<i>15</i>		<i>3.3</i>	
F	Credibility										
F1	Independent assurance of environmental disclosure	0	0	0	0	0	0	0	0	0	0
F2	Certification of environmental related standards	14	0	32	2	44	1	30	5	1	1
F3	Environmental auditing	2	1	11	0	11	2	8	1	1	1
F4	Products certification with respect to environmental impact	4	1	9	0	19	4	11	2	1.7	2
F5	Awards	5	1	4	3	14	0	8	1	1.3	1
	<i>Subtotal CED incidences (of 675 incidences)</i>	<i>25</i>	<i>3</i>	<i>56</i>	<i>5</i>	<i>88</i>	<i>7</i>	<i>56</i>	<i>10</i>	<i>5</i>	<i>5</i>
	<i>Percentage of disclosed CED incidences (of 675 incidences)</i>	<i>4%</i>	<i>0.4%</i>	<i>8%</i>	<i>0.7%</i>	<i>13%</i>	<i>1.0%</i>	<i>8%</i>		<i>0.7%</i>	
	<i>Average incidences or companies disclosed/item</i>	<i>5</i>	<i>0.6</i>	<i>11</i>	<i>1</i>	<i>18</i>	<i>1.4</i>	<i>11</i>		<i>1</i>	
	Total CED incidences (of 4,050 incidences)	273	60	689	95	772	127	578	100	94	100
	Percentage of disclosed CED incidences (of 4,050 incidences)	6.7%	1.5%	17.0%	2.3%	19.1%	3.1%	14.3%		2.3%	
	Percentage change based on absolute growth in total CED incidences	-	-	10.3%	0.8%	2.1%	0.8%				
	Average incidences or companies disclosed/item (of 30 items)	9	2	23	3	26	4	19		3	
	Average item/company (of 135 companies)	2	0.4	5	0.7	6	0.9	4		0.7	

6.5 Changes in CEDQty and CEDQ by Industry

In line with the changes in CEDQty and CEDQ overall scores on a yearly basis, Figure 6-8 to Figure 6-10 and Table 6-7 present the changes in CEDQty and CEDQ by industry.

Figure 6-8: Change in number of non-disclosure companies (zero overall score) by industry from 2006 to 2014

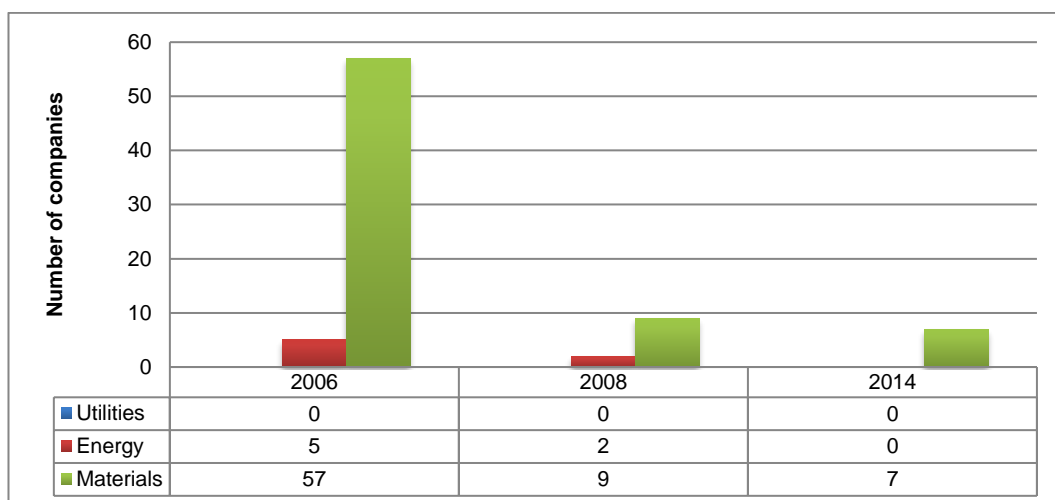


Figure 6-8 shows the change in the number of non-disclosure companies by industry to complement the explanation in Figure 6-3. There was a decrease in the number of non-disclosure companies in 2008 and 2014 as compared to that in 2006 in all industries, except for the utilities industry, which was always zero. Of the total sample of 135 companies, in 2006, 62 companies (or 46%) did not provide CED. The majority of these companies were in the materials industry (57 companies) while the remaining companies were in the energy industry (5 companies), with none in the utilities industry.

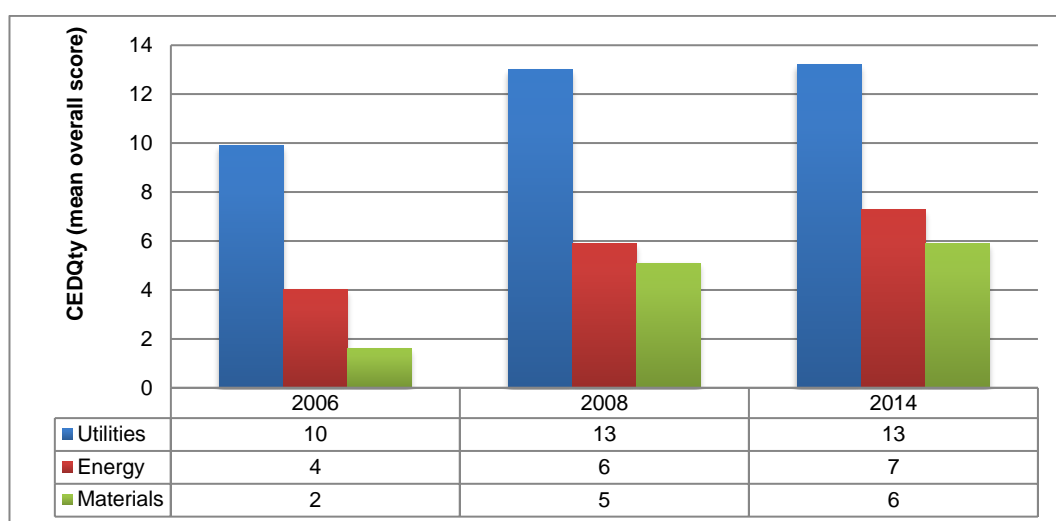
In 2008, as the number of disclosing companies increased markedly, the number of non-disclosure companies dropped drastically to 11. Following this, the number of non-disclosure companies in the materials industry reduced significantly to nine, compared to 57 in 2006. Meanwhile, the number of non-disclosure companies in

the energy industry reduced to two, whereas all companies in the utilities industry provided CED consistently.

During 2014, there were only seven non-disclosure companies in the materials industry, while all companies in the utilities and energy industries consistently reported some CED. Overall, the results suggest a substantial reduction in the number of non-disclosure companies across these industries, and over the years.

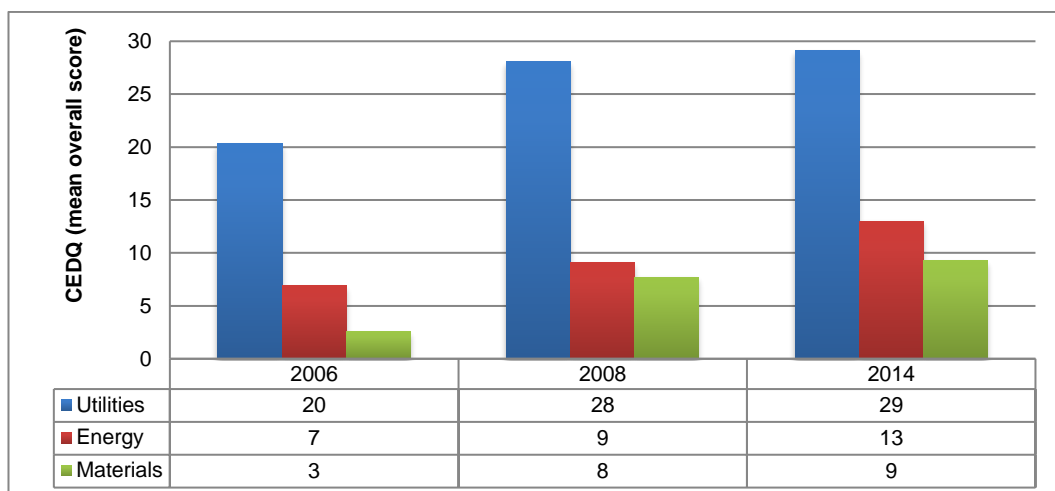
Concerning the disclosure of CED, Figure 6-9 and Figure 6-10 depict the yearly changes in CEDQty and CEDQ mean overall scores by industry to complement Figure 6-3.

Figure 6-9: Change in CEDQty (mean overall score) by industry from 2006 to 2014



In Figure 6-9, companies in the utilities industry reported the highest CEDQty mean overall scores for each reporting year, while the energy industry ranked second and the materials industry ranked last.

Figure 6-10: Change in CEDQ (mean overall score) by industry from 2006 to 2014



In Figure 6-10, a similar pattern appears in the CEDQ mean overall score for each reporting year. Companies in the utilities industry recorded the highest score in each reporting year (increase by 40% in 2008, and 4% in 2014). In comparison, companies in the energy industry reported an increase of 29 percent and 44 percent in 2008 and 2014, respectively. Meanwhile, consistent with the lowest CEDQ in 2006, companies in the materials industry recorded the lowest CEDQ compared to the rest of the industries in the sample. However, the percentage of change increased drastically by 167% (or 8) in 2008 but continued to increase slowly by 13 percent (or 9) in 2014.

Next, Figure 6-11 to Figure 6-13 show the yearly changes in CEDQ_{ty} and CEDQ minimum, mean and maximum overall scores by industry, while Figure 6-14 to Figure 6-17 illustrate the yearly changes in CEDQ_{ty} and CEDQ mean overall scores by dimension across industry.

Figure 6-11: Change in CEDQty and CEDQ (overall score) by industry in 2006

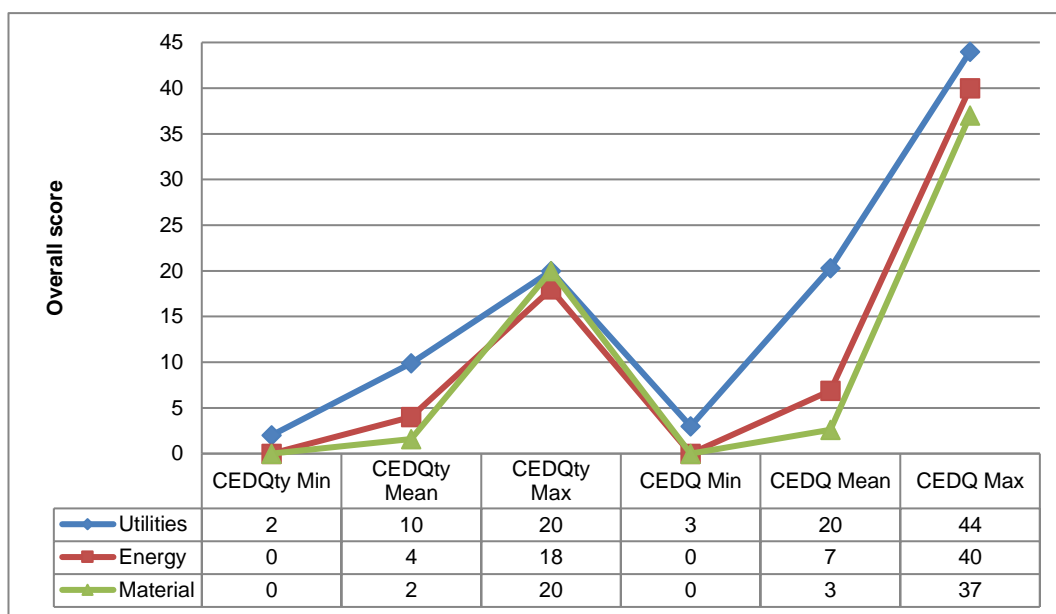


Figure 6-12: Change in CEDQty and CEDQ (overall score) by industry in 2008

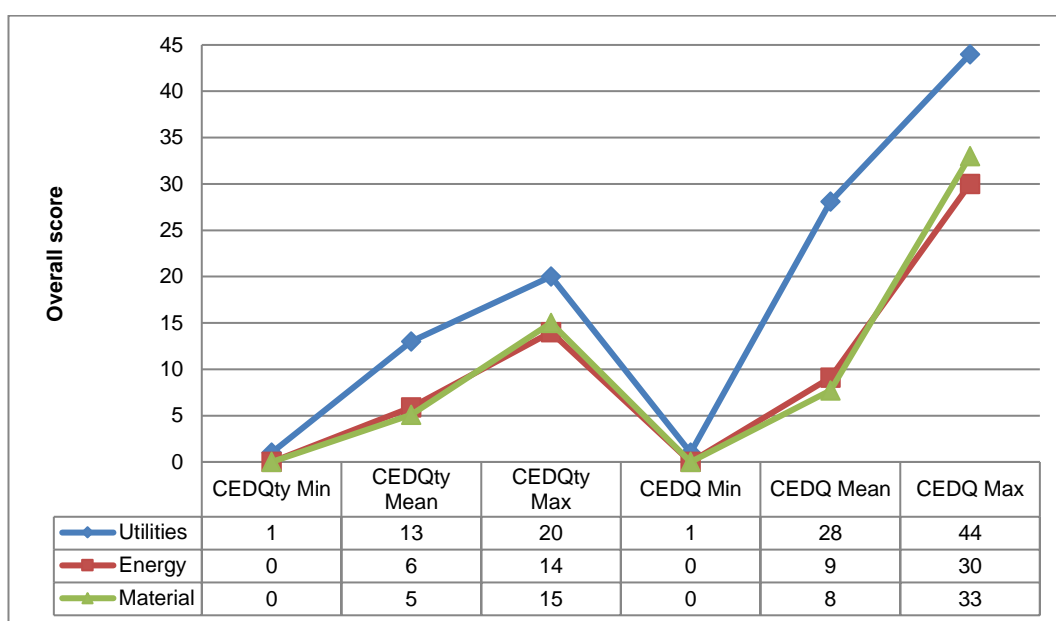
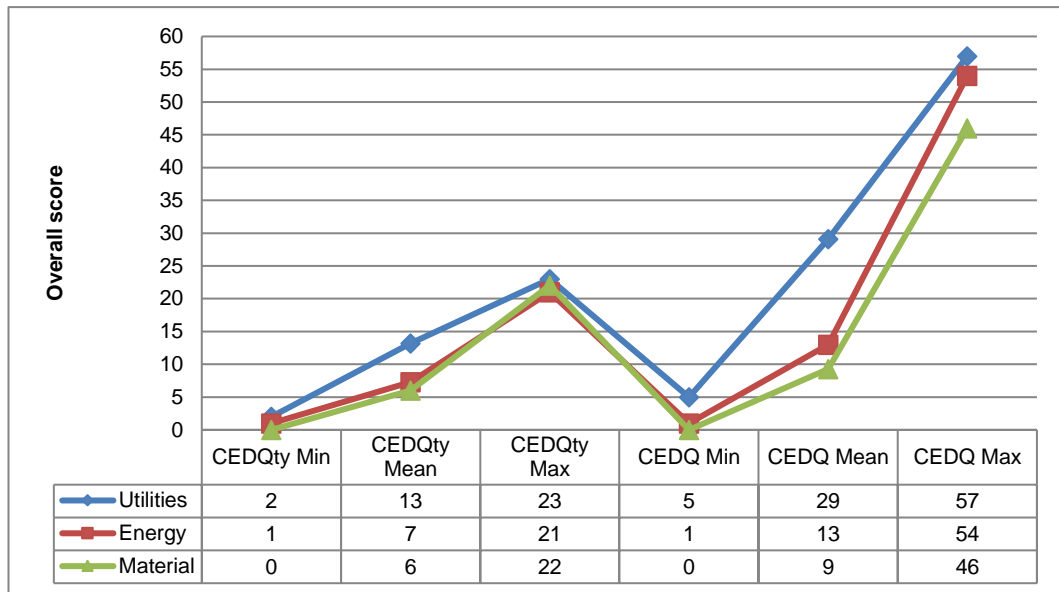


Figure 6-13: Change in CEDQty and CEDQ (overall score) by industry in 2014



As depicted in Figure 6-11 to Figure 6-13, companies in all industries had different CEDQty and CEDQ in 2006, 2008 and 2014. For example, with respect to CEDQ across industry, in 2006 while the maximum CEDQ overall score in the utilities industry was 44, the energy industry recorded 40, whilst the materials industry was only 37 (Figure 6-11). In 2008 and 2014, the disparity in the maximum CEDQ overall score continued to exist. The utilities industry reported the change from 44 to 57, the energy industry recorded a change from 30 to 54, whereas the materials industry reported a change from 33 to 46, indicating that companies in different industries over the years had different levels of CEDQ (Figure 6-12 and Figure 6-13).

Similarly, even within the same industry, this inconsistency persists and was indicated in the ranges of minimum and maximum CEDQty and CEDQ. For example, with respect to CEDQty, in 2006 although the CEDQty mean in the utilities industry was 10, it ranged between 2 and 20, indicating that some companies in utilities industry had very low CEDQty while some companies had moderate CEDQty (Figure 6-11).

In 2006 also, the same pattern was observed in CEDQ which had a minimum score of 3 and a maximum score of 44, even though the reported CEDQ mean was 20. Despite this, among the industries, the utilities industry continued to lead by demonstrating the highest mean overall score for both CEDQty and CEDQ in 2008 (13 and 28) and in 2014 (13 and 29) (Figure 6-12 and Figure 6-13).

Meanwhile, even though the materials industry had a higher maximum score of CEDQty in all the years compared to the energy industry, the CEDQty mean overall score of the energy industry was higher than the materials industry (Figure 6-11 to Figure 6-13). Therefore, this led the materials industry into the lowest ranking of CEDQty. Likewise, the CEDQ mean overall score of the materials industry was the lowest in the sample companies, even though there was a substantial increase in 2008, but not in 2014 (Figure 6-11 to Figure 6-13).

Overall, the results suggest that among the environmentally-sensitive industries in Malaysia, the utilities industry is the leader of CED reporting, whereas the energy and materials industries are likely to be the followers, which imitate the behaviour of the leader. This mimetic behaviour of CED is consistent with the argument of institutional theory that one way to exert pressures is by mimetic institutions (Scott, 2014).

Further analysis of the mean overall scores by dimension shows that among the six dimensions of CEDQty, in 2006, companies in the utilities and materials industries scored highest on CEDQty B (Figure 6-14). In contrast, companies in the energy industry scored highest on CEDQty A. This same pattern follows in 2008 (Figure 6-15). In 2014, while both utilities and materials industries maintained to provide the highest CEDQty B within their industry, companies in the energy industry gave almost equal weight to CEDQty A and CEDQty B (Figure 6-16).

Figure 6-14: Change in CEDQty and CEDQ by dimension based on industry in 2006

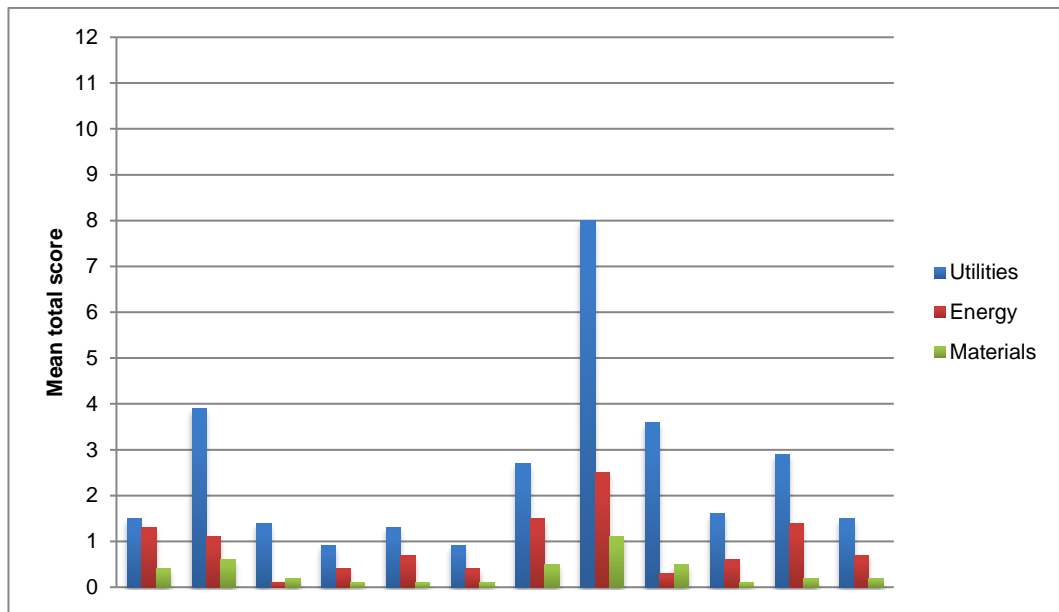


Figure 6-15: Change in CEDQty and CEDQ by dimension based on industry in 2008

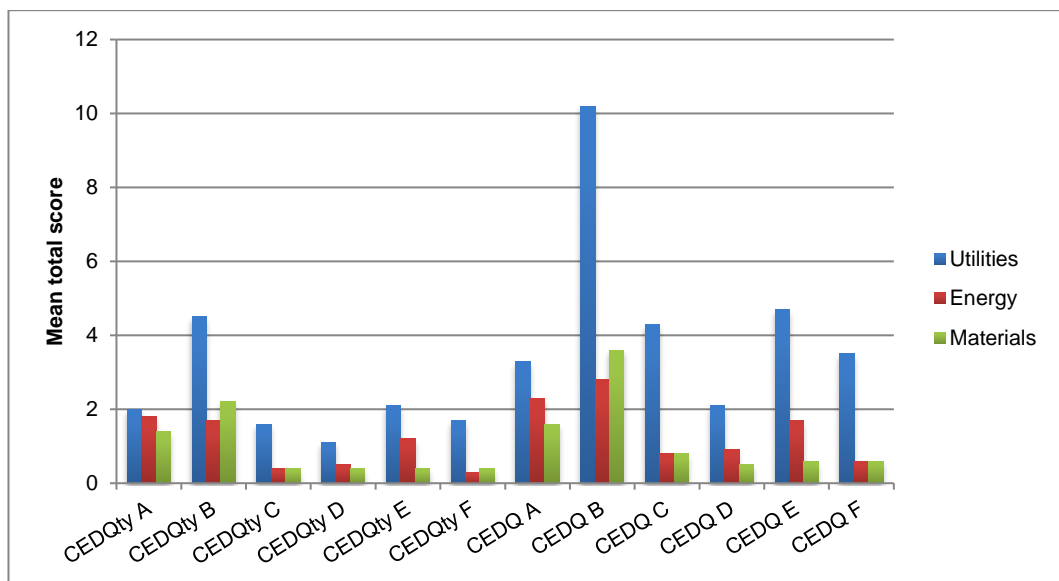
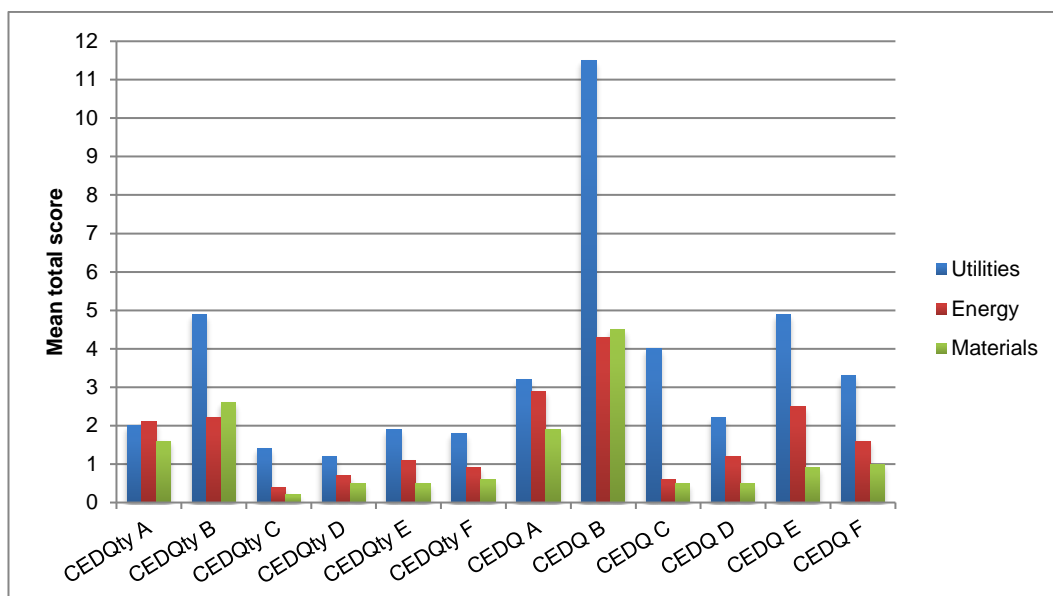


Figure 6-16: Change in CEDQty and CEDQ by dimension based on industry in 2014



In terms of the lowest score, in 2006, companies in the utilities industry had the lowest score on CEDQty D, the energy industry had the lowest score on CEDQty C, and the materials industry had the lowest scores on CEDQty D to CEDQty F (Figure 6-14). In 2008, while the same pattern as in 2006 continued for both the utilities and materials industries, the lowest score for the energy industry had shifted to CEDQty F (Figure 6-15). In 2014, while the utilities industry had consistently the lowest scores on CEDQty D, both the energy and materials industries scored lowest on CEDQty C (Figure 6-16).

Concerning the comparison of each CEDQty dimension, overall the utilities industry dominated the highest scores in all CEDQty dimensions consistently in the overall period. In 2006, of the three industries, the utilities industry led the highest scores in all the CEDQty dimensions consistent with its highest score in the CEDQty overall score (Figure 6-11 and Figure 6-14). The materials industry was the lowest scorer except for CEDQty C. In 2008, the same trend persisted with the exception of CEDQty B, CEDQty C, and CEDQty F (Figure 6-15). The materials industry outscored the energy industry in CEDQty B and CEDQty F, while having equal scores of CEDQty C with the energy industry. However, the pattern changed

in 2014, which shows that the CEDQty A score in the energy industry was on par with the utilities industry (Figure 6-16). Also, although the materials industry continued to be the lowest scorer in all CEDQty dimensions, only in CEDQty B did the industry outscore the energy industry. In sum, in terms of CEDQty, the results suggest that the utilities industry leads reporting of CEDQty in all dimensions. In addition, companies in all industries favour reporting related to CEDQty A and CEDQty B over the years.

In reference to CEDQ, aligned with the highest scores of CEDQty B in 2006, 2008 and 2014, there were also the highest scores of CEDQ B among all CEDQ dimensions within the utilities and materials industry (Figure 6-14 to Figure 6-17). However, for the energy industry, despite the expected highest score of CEDQ A in 2006 and 2008, the industry had the highest score on CEDQ B (Figure 6-14 and Figure 6-15). This indicates more quality disclosure on CEDQ B than just the presence of disclosure. In 2014, consistent with the highest score on CEDQty B, the energy industry continued to demonstrate the highest score on CEDQ B (Figure 6-16).

In comparing each of the CEDQ dimensions, across industries, the utilities industry dominated the highest scores in all CEDQ dimensions consistently in the period given. In 2006, of the three industries, the utilities industry led the highest scores in all the CEDQ dimensions, consistent with its highest scores in the CEDQ overall score (Figure 6-11 and Figure 6-14). The materials industry was the lowest scorer with the exception of CEDQ C. In 2008, the same pattern continued except for CEDQ B, CEDQ C, and CEDQ F (Figure 6-15). The materials industry outscored the energy industry in CEDQ B, but had equal scores of CEDQ C and CEDQ F with the energy industry. In 2014, while the energy industry continued to lead the highest scores in all the CEDQ dimensions, the material industry only led the energy industry in CEDQ B (Figure 6-16). Consistent with CEDQty, the results indicate that although the utilities industry led reporting in all CEDQ dimensions, companies in all industries appeared to prefer CEDQ B items.

Table 6-7: Comparison of CEDQty and CEDQ by industry

Panel A: Mean overall score and scores by dimension of CEDQty

	Utilities		Energy		Materials	
	Mean		Mean		Mean	
CEDQty	12.033		5.756		4.230	
CEDQty A	1.833		1.733		1.127	
CEDQty B	4.433		1.644		1.821	
CEDQty C	1.467		0.311		0.264	
CEDQty D	1.067		0.533		0.312	
CEDQty E	1.767		1.000		0.355	
CEDQty F	1.467		0.533		0.352	
N	30		45		330	

Panel B: Pairwise comparison of differences in mean^a overall score and scores by dimension of CEDQty

	Utilities vs Energy	Utilities vs Materials	Energy vs Materials
CEDQty	-5.93***	-9.11***	-2.14*
CEDQty A	-0.40	-3.45***	-3.55***
CEDQty B	-5.38***	-6.23***	0.51
CEDQty C	-9.49***	-12.22***	-0.58
CEDQty D	-3.81***	-6.66***	-2.34*
CEDQty E	-3.77***	-8.59***	-4.71***
CEDQty F	-5.04***	-7.45***	-1.46

Panel C: Mean overall score and scores by dimension of CEDQ

	Utilities		Energy		Materials	
	Mean		Mean		Mean	
CEDQ	25.833		9.711		6.503	
CEDQ A	3.067		2.267		1.327	
CEDQ B	9.900		3.178		3.024	
CEDQ C	3.967		0.556		0.579	
CEDQ D	1.967		0.911		0.391	
CEDQ E	4.167		1.844		0.603	
CEDQ F	2.767		0.956		0.579	

Panel D: Pairwise comparison of differences in mean^c overall score and scores by dimension of CEDQ

	Utilities vs Energy	Utilities vs Materials	Energy vs Materials
CEDQ	-7.60***	-11.26***	-2.24*
CEDQ A	-2.15*	-5.78***	-3.75***
CEDQ B	-6.34***	-8.02***	-0.21
CEDQ C	-10.00***	-12.27***	0.10
CEDQ D	-4.58***	-8.44***	-3.34***
CEDQ E	-5.40***	-10.25***	-4.28***
CEDQ F	-5.09***	-7.60***	-1.57

Significance level: *p<0.1, **p<0.05, ***p<0.01

Notes:

1. (^a) *t*-value from the ANOVA Tukey post-hoc test of differences in means.

2. CEDQty or CEDQ = Overall scores; CEDQty A or CEDQ A = Environmental governance; CEDQty B or CEDQ B = Environmental actions and environmental performance indicators; CEDQty C or CEDQ C = Environmental expenditures; CEDQty D or CEDQ D = Environmental compliance and risk; CEDQty E or CEDQ E = Stakeholder engagement; CEDQty F or CEDQ F = Credibility

Table 6-7 provides a comparison of CEDQty and CEDQ by industry based on pooled year data to complement the changing pattern of industry practices based on a yearly basis in Figure 6-9 to Figure 6-16. In panel A, on average, companies in the utilities industry had the highest score in CEDQty overall and by dimension, compared to the energy and materials industries.

The results of the ANOVA Tukey post-hoc tests in panel B confirmed that there were statistically significant ($p \leq 0.01$) differences in the mean scores of CEDQty overall and by dimension between the utilities and energy industries, except for CEDQty A. Similarly, there were statistically significant ($p \leq 0.01$) differences in the mean scores of CEDQty overall and all CEDQty dimensions between the utilities and materials industries. Using the utilities industry as a base industry, the negative t -value indicates that both the CEDQty of the energy and materials industries were lower than the utilities industry. In comparison, differences in the mean scores between the energy and materials industries were only statistically significant ($p \leq 0.1$) for CEDQty overall, CEDQty A, CEDQty D, and CEDQty E. Their negative t -value reveals that these scores of the materials industry were lower than the energy industry.

Panel C offers a comparison of CEDQ between the utilities, energy and materials industries. On average, companies in the utilities industry again had the highest score in CEDQ overall and by dimension, compared to the energy and materials industries.

Using the utilities industry as a base industry, panel D of the ANOVA Tukey post-hoc results show that the mean scores of CEDQ overall and all dimensions were statistically significant ($p < 0.1$) differences from the energy and materials industries. The t -values (e.g., -7.60, and -11.26) confirm that the utilities industry was the top performer among the industries. However, in regard to a comparison between the energy and materials industries, the differences in mean were statistically significant ($p < 0.1$) in CEDQ, CEDQ A, CEDQ D and CEDQ E only. The t -values (-2.24, -3.75, -3.34, -4.28) of these scores indicate that the energy industry was more

comprehensively reported than the materials industry, but for other CEDQ dimensions both industries were on par.

Overall, the above statistical tests confirmed the earlier findings that in all years, the utilities industry led both reporting of CEDQty and CEDQ among the environmentally-sensitive industries (ESI), while the materials industry was positioned as the follower of both the reporting of CEDQty and CEDQ. Again, similar to the effect of institutional changes (as proxy by changes between years), the magnitude of industry sector in influencing the CEDQty and CEDQ in different years is yet to be examined in the multivariate analyses.

6.6 Changes in CEDQty and CEDQ Reporting Content

Analyses in Section 6.4 (see Table 6-5 and Table 6-6) indicate that on average, the majority of companies in all industries preferred to report items in the CEDQty A dimension. Again, items in dimension A became the most reported item for CEDQ qualitative, while the highest reported item for CEDQ quantitative was evidenced in the dimension C. Table 6-8 summarises these reporting preferences by dimension for all industries for each reporting year.

In panel A, on average reporting per year, CEDQty A had the highest number of reporting companies (34), followed by CEDQty D and CEDQty B. CEDQty E ranked fourth, followed by CEDQty C. CEDQty F dimension had the lowest number of reporting companies per year (12). The trend analysis over the three reporting years show that all dimensions had increased number of reporting companies in each year, except for CEDQty C. For each year, items in the CEDQty A dimension consistently became the most reported item by companies, as opposed to items in other dimensions.

Table 6-8: Change in the number of reporting companies for CEDQty and CEDQ by dimension

Panel A: CEDQty

Based on average companies disclosed per item ^a	2006 (n=135)	2008 (n=135)	2014 (n=135)	Average companies disclosed/year
CEDQty A	16	40	45	34 ^b
<i>% of the maximum</i>	<i>12%^c</i>	<i>30%</i>	<i>33%</i>	<i>25%</i>
<i>% change based on absolute growth</i>		<i>18%^d</i>	<i>3%</i>	
<i>% change based on relative growth</i>		<i>20%^e</i>	<i>5%</i>	
CEDQty B	11	29	34	24
<i>% of the maximum</i>	<i>8%</i>	<i>21%</i>	<i>25%</i>	<i>18%</i>
<i>% change based on absolute growth</i>		<i>13%</i>	<i>4%</i>	
<i>% change based on relative growth</i>		<i>15%</i>	<i>5%</i>	
CEDQty C	13	21	14	16
<i>% of the maximum</i>	<i>10%</i>	<i>16%</i>	<i>10%</i>	<i>12%</i>
<i>% change based on absolute growth</i>		<i>6%</i>	<i>-6%</i>	
<i>% change based on relative growth</i>		<i>7%</i>	<i>-6%</i>	
CEDQty D	13	30	37	27
<i>% of the maximum</i>	<i>10%</i>	<i>22%</i>	<i>27%</i>	<i>20%</i>
<i>% change based on absolute growth</i>		<i>12%</i>	<i>5%</i>	
<i>% change based on relative growth</i>		<i>14%</i>	<i>7%</i>	
CEDQty E	10	21	23	18
<i>% of the maximum</i>	<i>7%</i>	<i>16%</i>	<i>17%</i>	<i>13%</i>
<i>% change based on absolute growth</i>		<i>9%</i>	<i>1%</i>	
<i>% change based on relative growth</i>		<i>9%</i>	<i>2%</i>	
CEDQty F	6	12	19	12
<i>% of the maximum</i>	<i>4%</i>	<i>9%</i>	<i>14%</i>	<i>9%</i>
<i>% change based on absolute growth</i>		<i>5%</i>	<i>5%</i>	
<i>% change based on relative growth</i>		<i>5%</i>	<i>6%</i>	
Average companies disclosed/ item	11	26 ^f	30	22
<i>% of the maximum</i>	<i>8%</i>	<i>19%</i>	<i>22%</i>	<i>17%</i>
<i>% change based on absolute growth</i>		<i>11%</i>	<i>3%</i>	
<i>% change based on relative growth</i>		<i>12%</i>	<i>4%</i>	

Table 6-8: Change in the number of reporting companies for CEDQty and CEDQ by dimension (continued)

Panel B: CEDQ

Based on average companies disclosed per item ^g (1-2=CEDQ qualitative; 3-4=CEDQ quantitative)	2006		2008		2014		Average companies disclosed/ year	
	1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4
CEDQ A	15	0.4	40	0.4	44	0.8	33	0.5
% of the maximum	11%	0.3%	29%	0.3%	33%	0.6%	25%	0.4%
% change based on absolute growth			18%	0%	4%	0.3%		
% change based on relative growth			21%	0%	4%	0.3%		
CEDQ B	8	2.6	24	4.7	27	6.4	20	4.5
% of the maximum	6%	2%	18%	3.5%	20%	4.7%	15%	3.4%
% change based on absolute growth			12%	1.5%	2%	1.2%		
% change based on relative growth			13%	1.5%	3%	1.3%		
CEDQ C	7	5.7	14	7.3	7	6.7	9	6.7
% of the maximum	5%	4.2%	10%	5.4%	6%	4.9%	7%	4.9%
% change based on absolute growth			5%	1.2%	-4%	-0.5%		
% change based on relative growth			5%	1.2%	-6%	-0.5%		
CEDQ D	12	1	28	2	34	2.5	25	2
% of the maximum	9%	0.7%	21%	1.5%	25%	1.9%	18%	1.5%
% change based on absolute growth			12%	0.8%	4%	0.4%		
% change based on relative growth			13%	0.7%	6%	0.4%		
CEDQ E	8	1.8	19	2.5	18	5.3	15	3.3
% of the maximum	6%	1.3%	14%	1.9%	13%	3.9%	11%	2.4%
% change based on absolute growth			8%	0.6%	-1%	2%		
% change based on relative growth			9%	0.5%	-1%	2%		
CEDQ F	5	0.6	11	1	18	1.4	11	1
% of the maximum	4%	0.4%	8%	0.7%	13%	1%	8%	0.7%
% change based on absolute growth			4%	0.3%	5%	0.3%		
% change based on relative growth			5%	0.3%	6%	0.3%		
Average companies disclosed/ item	9	2	23	3	26	4	19	3
% of the maximum	7%	1.5%	17%	2.3%	19%	3.1%	14%	2.3%
% change based on absolute growth			10%	0.8%	2%	0.8%		
% change based on relative growth			11%	0.8%	3%	0.8%		

Notes:

1. ^(a) Refer Table 6-5.

2. ^(b) Average companies disclosed/year = (16 + 40 + 45 companies) / 3 years = 33.7 companies ≈ 34 companies per year.

3. ^(c) Percentage of the maximum = 16 companies / 135 companies * 100% = 11.9% ≈ 12%.

4. ^(d) Percentage change based on absolute growth = 30% - 12% = 18% (see Section 5.4.1.7).

5. ^(e) Percentage change based on relative growth = [(40 companies - 16 companies) / (135 companies - 16 companies)] * 100% = 20.2% ≈ 20% (see Section 5.4.1.7).

6. ^(f) Average companies disclosed/item = (40 + 29 + 21 + 30 + 21 + 12 companies) / 6 dimensions = 26 companies per item

7. ^(g) Refer Table 6-6.

8. CEDQty = Corporate environmental disclosure quantity; CEDQ = Corporate environmental disclosure quality; CEDQ A or CEDQ A = Environmental governance; CEDQty B or CEDQ B = Environmental actions and environmental performance indicators; CEDQty C or CEDQ C = Environmental expenditures; CEDQty D or CEDQ D = Environmental compliance and risk; CEDQty E or CEDQ E = Stakeholder engagement; CEDQty F or CEDQ F = Credibility

For CEDQ in panel B, on average reporting per year for CEDQ qualitative (column 1-2), CEDQ A had the highest number of reporting companies (33), followed by CEDQ D, CEDQ B, CEDQ E and CEDQ F. The lowest number of reporting companies was CEDQ C (9) and this was consistent with the CEDQty result. The trend analysis over the three reporting years display that the number of reporting companies in all dimensions were increasing in each year except for CEDQ C and CEDQ E in 2014. Items in the CEDQ A dimension remain the highest reported items in qualitative form for each year, compared to items in the remaining five dimensions.

In reference to the average reporting per year for CEDQ quantitative (column 3-4), the result was in contrast to CEDQ qualitative. This is due to CEDQ C had the highest number of reporting companies (7), followed by CEDQ B, CEDQ E, CEDQ D, CEDQ F and the last was CEDQ A (1). The trend analysis over the three reporting years shows that among all items in different dimensions, items in CEDQ C were the most reported item in quantitative form for each year. It is also interesting to note that although small, there was an upward shift in the number of companies providing CEDQ quantitative incidences in all dimensions for each year. This indicates that at least the sample companies in Malaysia are making some effort to progress slowly towards quality environmental disclosure.

It is acknowledged earlier (see Section 6.4) that changes between 2006 and 2008 were higher than changes between 2008 and 2014. To compute such changes, Yang and Farley (2016) argued that the percentage change based on relative growth is a better measure than the percentage change based on absolute growth (see Section 5.4.1.7). However, when comparing the change for each respective duration using the percentage change based on absolute growth and based on relative growth, there is not much difference between both percentage changes for CEDQty, CEDQ qualitative and CEDQ quantitative. For instance, the percentage change based on absolute growth in the average companies disclosed each CEDQty item from 2006 to 2008 was 11% (19% in 2008 less 8% in 2006). This means compared to the number of reporting companies in 2006, on average, there was an addition of eleven

percent of companies that report each CEDQty item in 2008. Meanwhile, the percentage change based on relative growth shows the growth of 12%. This implies that twelve percent of non-reporting companies in 2006 would report each CEDQty item in 2008. Of this, the highest increase was devoted to the reporting of CEDQty A items (20%). This means 20 percent of non-reporting companies in 2006 would report CEDQty A item in 2008.

Similarly, from 2008 to 2014, the difference between the percentage change based on absolute growth (3%) and based on relative growth (4%) in the average companies disclosed each CEDQty item was small. The three percent absolute growth means that on average, an additional three percent companies would report each CEDQty item in 2014 as opposed to the number of reporting companies in 2008. The four percent relative growth implies that four percent of non-reporting companies in 2008 would report each CEDQty item in 2014.

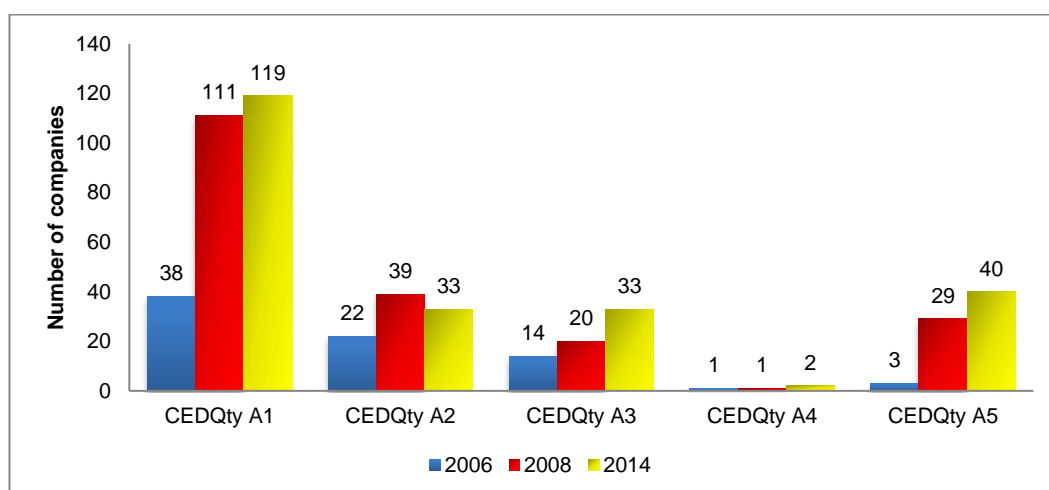
The small difference between the percentage change based on absolute growth and based on relative growth is in contrast to the study by Yang and Farley (2016) who reported a large variation between both percentage change. One explanation for this is Yang and Farley (2016) reported a higher reporting level in their sample. With a higher reporting level, there were large differences between the change based on absolute growth and the change based on relative growth. This is opposed to the low reporting level in the sample of this thesis which result in the small difference in both percentage changes. Although there was small difference in both percentage changes, the percentage change based on relative growth is more useful in an attempt to analyse further growth in the number of reporting companies that provide each item, consistent with the argument of Yang and Farley (2016). This is because the change based on relative growth is not biased against countries that have a high level of reporting as it adjusts the base reporting in a country by computing how many companies are left for not reporting.

Next, the following subsections present the change in the number of companies reporting on individual CEDQty and CEDQ items for each reporting year by dimension to complement the results in Table 6-8.

6.6.1 CEDQty A and CEDQ A: Environmental Governance

Figure 6-17 illustrates the change in individual items of the CEDQty A dimension while Figure 6-18 depicts the change in individual items of the CEDQ A dimension.

Figure 6-17: Change in CEDQty A (Environmental governance)

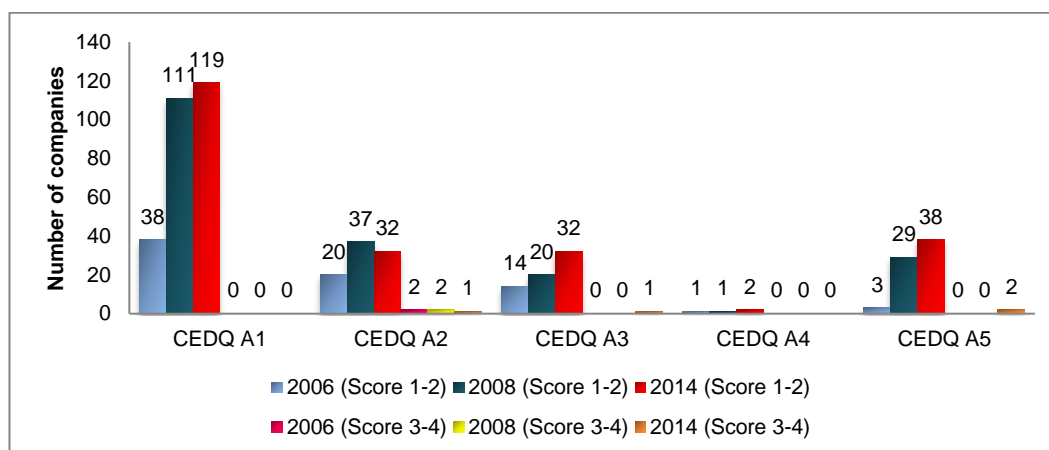


Notes: A1=a statement on commitment to the protection of the environment; A2=a statement about a company's environmental management system; A3=board and/or committee and/or; department and/or officers of environmental management; A4=stakeholder involvements in setting a company's environmental policy and/or environmental disclosure process; A5=board and/or employee training in relation to environmental management practices.

Based on Figure 6-17, there was substantially a higher reporting on the CEDQty A1 item than the other four items, although all the five items in CEDQty A are derived from international reporting guidelines (see Section 5.4.1.1). Moreover, this item rose spectacularly in the number of reporting incidences between 2006 and 2008 (192%), and further increased marginally between 2008 and 2014 (7%). In contrast, the CEDQty A4 item had the lowest reporting with at least one company in each reporting year. These companies were Minho M Bhd in the materials industry (2006 and 2008), Advanced Packaging Technology M Bhd in the materials industry (2014), and Puncak Niaga Holdings Bhd in the utilities industry (2014). Notably, this CEDQty A4 item was not specified in the Malaysian guidelines (see

Section 5.4.1.1), thus indicating the possible reason for the lowest reporting. Interestingly, CEDQty A2 item rose substantially between 2006 and 2008 (77%), but fell by 15 percent between 2008 and 2014.

Figure 6-18: Change in CEDQ A (Environmental governance)



Notes: A1=a statement on commitment to the protection of the environment; A2=a statement about a company's environmental management system; A3=board and/or committee and/or; department and/or officers of environmental management; A4=stakeholder involvements in setting a company's environmental policy and/or environmental disclosure process; A5=board and/or employee training in relation to environmental management practices.

In Figure 6-18, the substantially higher reporting of the CEDQ A1 item was caused by the higher incidences in CEDQ qualitative incidences over the years. The same pattern was also observed in the CEDQ A4 item, which had the lowest reporting over the years.

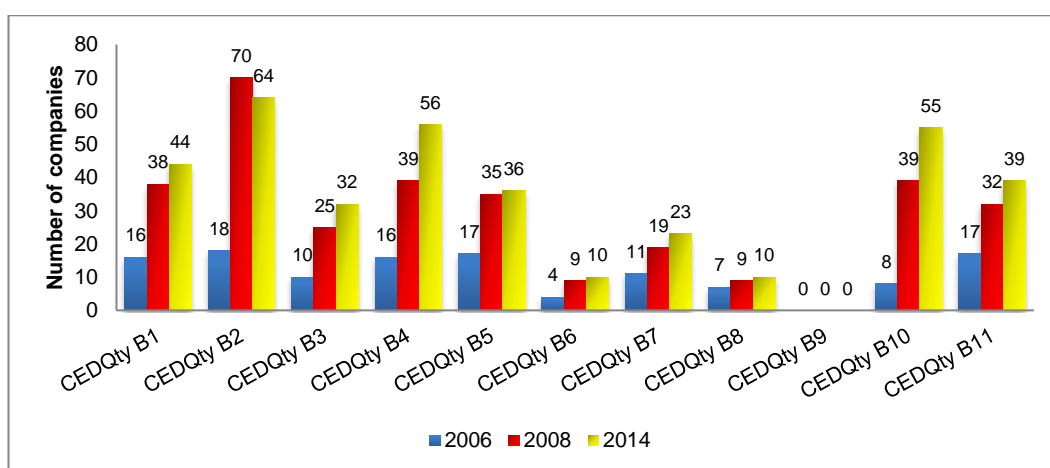
The presence of CEDQ quantitative incidences was only observed on specific items, including CEDQ A2, CEDQ A3 and CEDQ A5, with at least one reporting company in each item. While the CEDQ A2 consistently had at least one reporting company in each reporting year, both CEDQ A3 and CEDQ A5 only had companies reporting CEDQ quantitative in 2014 rather than earlier years. The specific companies were: CEDQ A2 - Puncak Niaga Holdings Berhad (utilities industry), Petronas Gas Berhad (utilities industry), and Malaysia Smelting Corporation Bhd (materials industry); CEDQ A3 - Alam Maritim Resources Bhd (energy industry); and CEDQ A5 - CSC Steel Holdings Bhd (materials industry) and Shell Refining Company (Federation of Malaya) Berhad (energy industry). This indicates that in

addition to less preference for disclosure of these items, the initiative to move towards quantitative disclosure only rose in the most recent reporting year.

6.6.2 CEDQty B and CEDQ B: Environmental Actions and Environmental Performance Indicators

Figure 6-19 shows the change in individual items of the CEDQty B dimension while Figure 6-20 presents the change in individual items of the CEDQ B dimension.

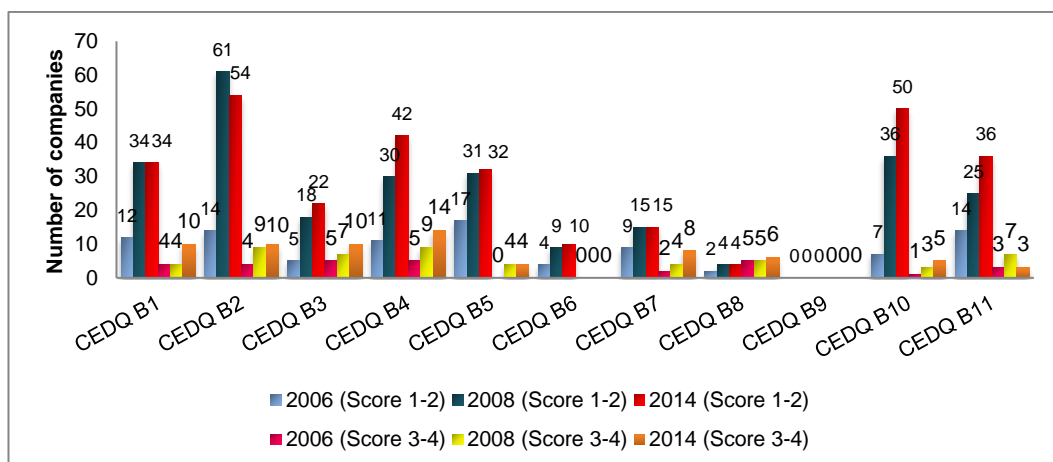
Figure 6-19: Change in CEDQty B (Environmental actions and environmental performance indicators)



Notes: B1=air emission and management; B2=solid waste, and effluent generation and management; B3=water consumption and efficiency; B4=energy consumption and efficiency; B5=materials consumption and efficiency; B6=noise and odour pollution; B7=biodiversity and conservation; B8=land remediation, contamination or degradation; B9=other remediation efforts (not covered from B1 to B8); B10=recycling/reuse/reduce; B11=products/services responsibility.

As indicated in Figure 6-19, among all the 11 items in the CEDQty B dimension, there was no reporting on the CEDQty B9 in all the periods. However, the majority of companies in the sample had a higher preference for disclosure on specific items, including: CEDQty B2 (2006: 13%, 2008: 52%, 2014: 47%), CEDQty B4 (2006: 12%, 2008: 29%, 2014: 41%), CEDQty B10 (2006: 6%, 2008: 29%, 2014: 41%) and CEDQty B1 (2006: 12%, 2008: 28%, 2014: 33%). Notably, all these items are present in both the Malaysian and international guidelines. The higher increase in ‘energy consumption and efficiency’ and ‘air emission and management’ and ‘recycling/reuse/reduce’ is consistent with the rising concern in climate-change reporting across the world (Ernst & Young and Boston College Centre, 2014).

Figure 6-20: Change in CEDQ B (Environmental actions and environmental performance indicators)



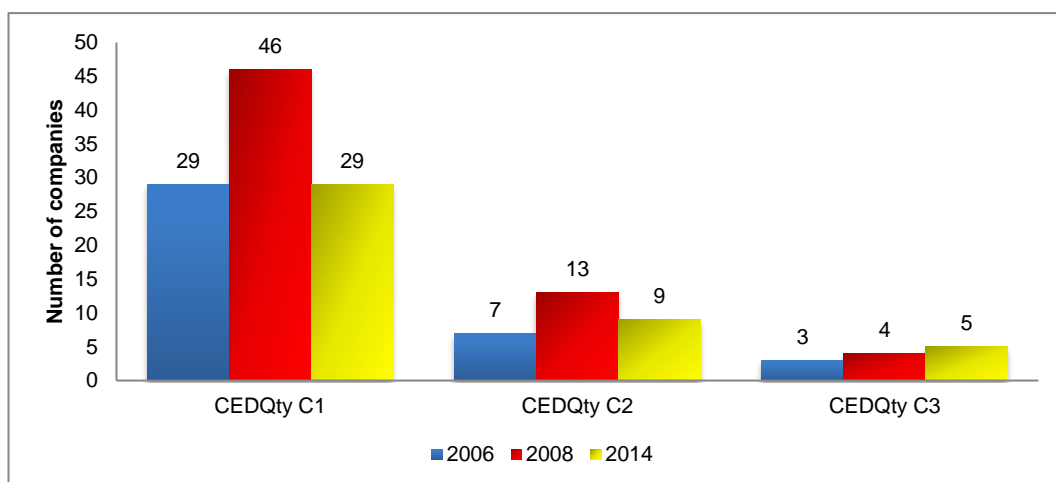
Notes: B1=air emission and management; B2=solid waste, and effluent generation and management; B3=water consumption and efficiency; B4=energy consumption and efficiency; B5=materials consumption and efficiency; B6=noise and odour pollution; B7=biodiversity and conservation; B8=land remediation, contamination or degradation; B9=other remediation efforts (not covered from B1 to B8); B10=recycling/reuse/reduce; B11=products/services responsibility.

In Figure 6-20, the substantially higher reporting of CEDQ B2, CEDQ B4, CEDQ B10, and CEDQ B1 items were partly due to the presence of both CEDQ qualitative and quantitative incidences over the years. However, the higher presence of CEDQ quantitative incidences was only observed on specific items, including CEDQ B1, CEDQ B2, CEDQ B3 and CEDQ B4, with at least four reporting companies in each item for each reporting year.

6.6.3 CEDQty C and CEDQ C: Environmental Expenditures

Figure 6-21 demonstrates the change in individual items of the CEDQty C dimension while Figure 6-22 shows the change in individual items of the CEDQ C dimension.

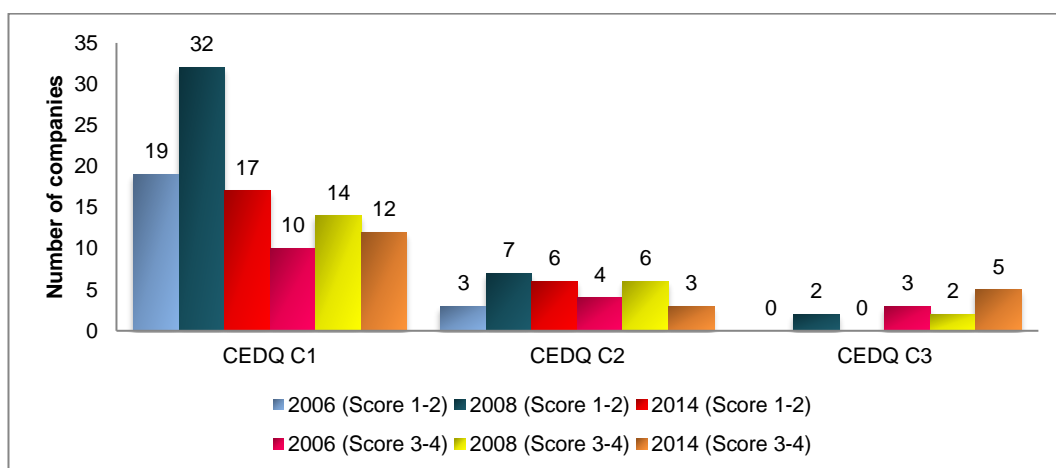
Figure 6-21: Change in CEDQty C (Environmental expenditures)



Notes: C1=investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency; C2=operating costs of assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency; C3=financing for investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency.

It is apparent from Figure 6-21 that the CEDQty C1 item had the highest reporting in and across all years. Despite this, the changes from year to year recorded that initially the propensity to report this item almost doubled in 2008, only to slip back to 29 companies in 2014. The lowest reporting item was on CEDQty C3, represented by at least three reporting companies in each year. Notably, this item only appears in the Malaysian guidelines.

Figure 6-22: Change in CEDQ C (Environmental expenditures)



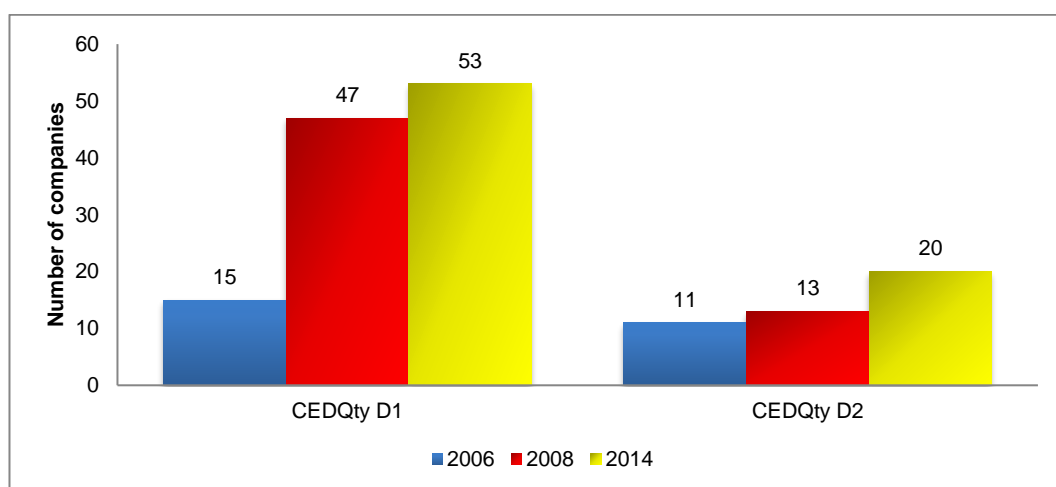
Notes: C1=investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency; C2=operating costs of assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency; C3=financing for investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency.

On the CEDQ, Figure 6-22 shows the increase in the CEDQ C1 between 2006 and 2008 was due more to the higher reporting in the CEDQ qualitative incidences (68%) than the CEDQ quantitative incidences (40%). However, in 2014 a fall in the propensity to report the CEDQ qualitative incidences (47%) was much larger than a fall in the propensity to report the CEDQ quantitative incidences (14%). Although the CEDQ C3 was the lowest reporting item among all the three reporting items in the ‘environmental expenditures’ dimension, the tendency to report the CEDQ quantitative incidences grew significantly in 2014 (150%).

6.6.4 CEDQty D and CEDQ D: Environmental Compliance and Risk

Figure 6-23 provides the change in individual items of the CEDQty D dimension while Figure 6-24 presents the change in individual items of the CEDQ D dimension.

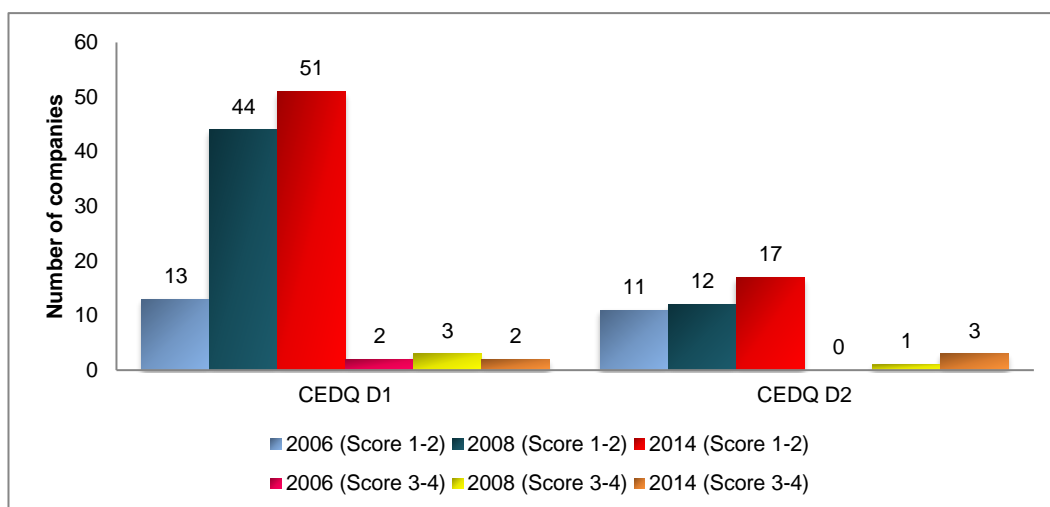
Figure 6-23: Change in CEDQty D (Environmental compliance and risk)



Notes: D1=environmental compliance status of relevant laws and guidelines; D2=environmental risk assessments.

In Figure 6-23, there is clearly an increasing trend of CEDQty D in the CEDQty D1 and CEDQty D2 items between 2006 and 2014. However, while the change between 2006 and 2008 (213%) was more significant than the change between 2008 and 2014 (13%) for CEDQty D1, the CEDQty D2 featured a contrasting pattern (18% and 54%).

Figure 6-24: Change in CEDQ D (Environmental compliance and risk)



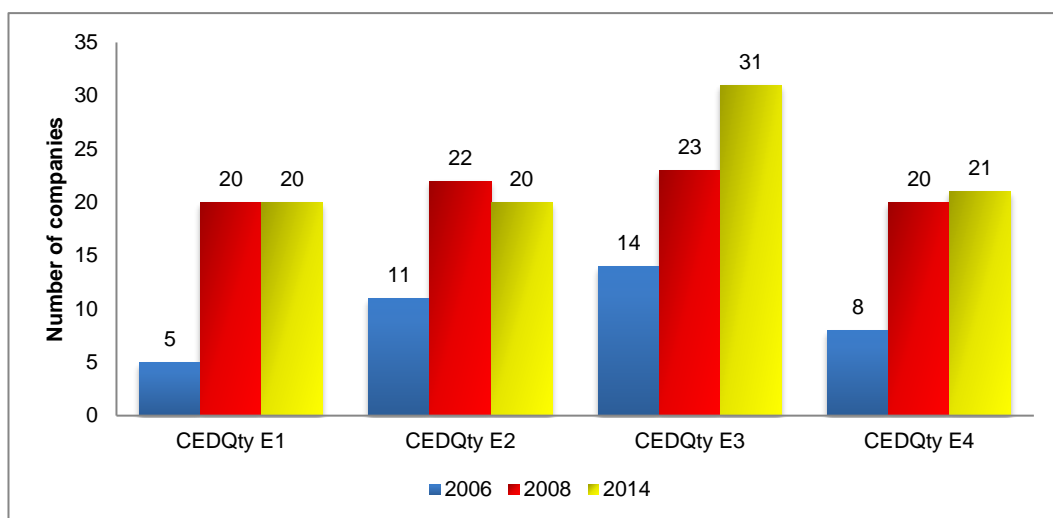
Notes: D1=environmental compliance status of relevant laws and guidelines; D2=environmental risk assessments.

For CEDQ, Figure 6-24 illustrates that while there was an increasing trend in reporting both items in CEDQ D, companies in the sample preferred to report CEDQ qualitative incidences rather than CEDQ quantitative incidences in all the years, resulting in a lower quality CED in the ‘environmental compliance and risk’ dimension.

6.6.5 CEDQty E and CEDQ E: Stakeholder Engagement

Figure 6-25 depicts the change in individual items of the CEDQty E dimension, while Figure 6-26 demonstrates the change in individual items of the CEDQ E dimension.

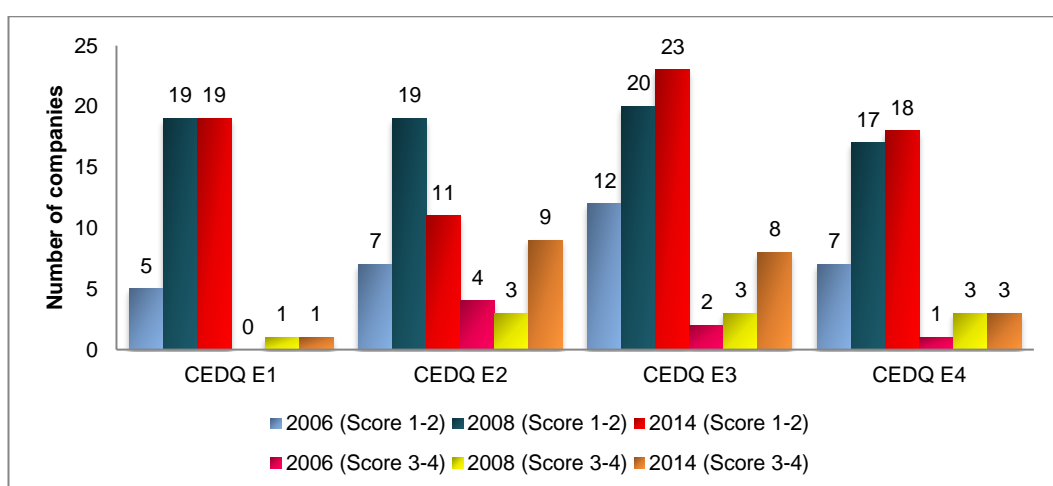
Figure 6-25: Change in CEDQty E (Stakeholder engagement)



Notes: E1=employee environmental management programs within a company; E2=community outreach programs; E3=donation and/or partnership with environmental organisations/external parties in relation to environmental campaigns/practices; E4=engagement in supply chains in relation to products/services produced/offered.

As depicted in Figure 6-25, all the four CEDQty E items demonstrated an increase in reporting trends between 2006 and 2008. However, between 2008 and 2014 there was a variation in the trend for each item. While both the CEDQty E3 and CEDQty E4 items increased gradually, the CEDQty E1 remained static and the CEDQty E2 slipped back to 9 percent. This CEDQty E1 item is included in the Malaysian guidelines only, while the rest of the items are included in both the Malaysian and international guidelines.

Figure 6-26: Change in CEDQ E (Stakeholder engagement)



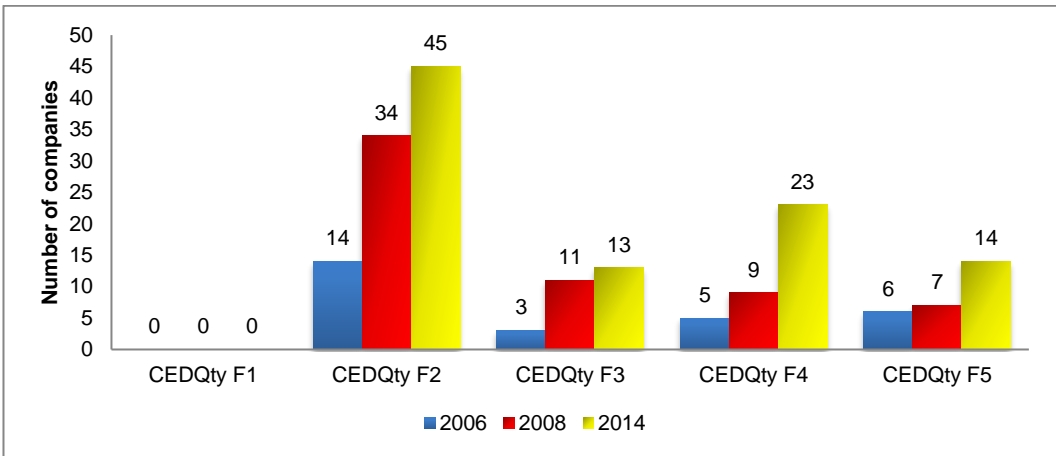
Notes: E1=employee environmental management programs within a company; E2=community outreach programs; E3=donation and/or partnership with environmental organisations/external parties in relation to environmental campaigns/practices; E4=engagement in supply chains in relation to products/services produced/offered.

In terms of CEDQ, Figure 6-26 reveals that the reporting of all CEDQ E items evidenced higher reporting in the CEDQ qualitative incidences than the CEDQ quantitative incidences. For example, although the CEDQ E3 item rose progressively over the reporting years, the maximum number of companies reporting CEDQ quantitative incidences was only nine, whereas the maximum number of companies reporting CEDQ qualitative incidences was 23. Despite this, the reporting of CEDQ quantitative incidences for the CEDQ E2 item in 2014 increased to 200 percent, although the overall movement of CEDQ E2 between 2008 and 2014 showed a downward trend.

6.6.6 CEDQty F and CEDQ F: Credibility

Figure 6-27 and Figure 6-28 show the change in the ‘credibility’ dimension of CEDQty and CEDQ of each individual item in each year 2006, 2008, and 2014.

Figure 6-27: Change in CEDQty F (Credibility)

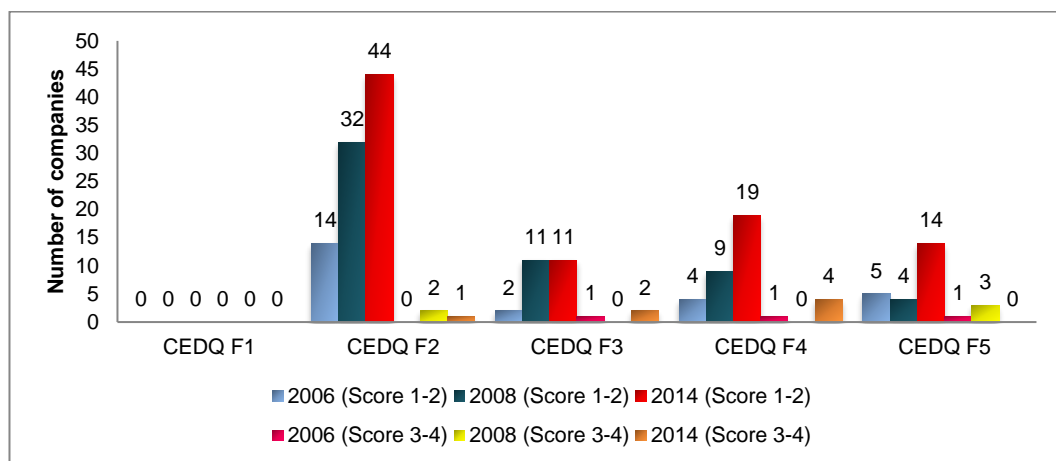


Notes: F1=independent assurance of environmental disclosure; F2=certification of environmental related standards; F3=environmental auditing; F4=products certification with respect to environmental impact; F5= awards.

Consistent with the lowest overall reporting of the six CEDQty dimensions, it is apparent in Figure 6-27 that low disclosures were found in the ‘credibility’ dimension, except for CEDQty F1. An interesting finding is that each individual item in this dimension featured a sustained growth across three reporting years, aside from the CEDQty F1 item. While CEDQty F1, CEDQty F2 and CEDQty F4

items are applicable in the international guidelines only, the CEDQty F5 item is applicable in the Malaysian guidelines only.

Figure 6-28: Change in CEDQ F (Credibility)



Notes: F1=independent assurance of environmental disclosure; F2=certification of environmental related standards; F3=environmental auditing; F4=products certification with respect to environmental impact; F5= awards.

In respect of CEDQ, Figure 6-28 depicts that, in general, companies were more inclined to report CEDQ qualitative incidences than CEDQ quantitative incidences. The CEDQ F2 item has the highest CEDQ qualitative incidences for all the reporting years compared to the other items in the ‘credibility’ dimension. The highest CEDQ quantitative incidences were demonstrated in the CEDQ F4 item, however only one company reported this in 2006 (YTL Power International Berhad, utilities industry). There was zero reporting in 2008, increasing to four companies in 2014 (Alam Maritim Resources Bhd, energy industry; Petronas Dagangan Berhad, energy industry; Puncak Niaga Holdings Berhad, utilities industry; and Ta Ann Holdings Bhd, material industry).

6.6.7 Distribution of International and Malaysian Guidelines according to Malaysian CED Practices

Table 6-9: Distribution of CED reporting according to international and Malaysian guidelines

	2006 (n=135)	2008 (n=135)	2014 (n=135)	Average per year	Max per year
Panel A: Number of incidences per guidelines					
International guidelines only	20	44	70	45	540
% of the maximum	3.7%	8.1% ^a	13.0%	8.3%	
% change based on absolute growth		4.4% ^b	4.9%		
% change based on relative growth		4.4% ^c	4.8%		
Malaysian guidelines only	18	40	49	36	675
% of the maximum	2.7%	5.9%	7.3%	5.3%	
% change based on absolute growth		3.2%	1.4%		
% change based on relative growth		3.3%	1.3%		
Both international and Malaysian guidelines	295	700	780	592	2835
% of the maximum	10.4%	24.7%	27.5%	20.9%	
% change based on absolute growth		14.3%	2.8%		
% change based on relative growth		15.9%	3.7%		
Total incidences	333	784	899	672	4050
% of the maximum	8.2%	19.4%	22.2%	16.6%	
% change based on absolute growth		11.2%	2.8%		
% change based on relative growth		11.1%	2.8%		
Panel B: Average companies disclosed/item					
International guidelines only	5 ^d	11	18	11	135
Malaysian guidelines only	4 ^e	8	10	7	135
Both international and Malaysian guidelines	14 ^f	33	37	28	135
Total	23	52	65	47	135

Notes:

1. ^(a) $44 / (4 \text{ items} \times 135 \text{ companies}) \times 100\% = 8.1\%$
2. ^(b) $8.1\% - 3.7\% = 4.4\%$
3. ^(c) $[(44 - 20) / (4 \text{ items} \times 135 \text{ companies}) - 20] \times 100\% = 4.4\%$
4. ^(d) $20 \text{ incidences} / 4 \text{ items} = 5 \text{ companies}$
5. ^(e) $18 \text{ incidences} / 5 \text{ items} \approx 4 \text{ companies}$
6. ^(f) $295 \text{ incidences} / 21 \text{ items} = 14 \text{ companies}$

Table 6-9 provides a summary of changes in the distribution of international and Malaysian guidelines according to the reporting of CED by the sample of 135 Malaysian companies per year or 405 company-year observations. In total, there are 30 CED items which can be clustered into six dimensions. In addition to these six dimensions grouping, this thesis divides these 30 CED items according to the distribution of international guidelines only (4 items), Malaysian guidelines only (5 items), and both international and Malaysian guidelines (21 items). Panel A

provides the number of incidences per guidelines for each reporting year and the change in reporting items over time, while panel B presents the average number of companies that disclosed each item for the respective group of guidelines.

In panel A, clearly ‘both international and Malaysian guidelines’ was the most reported item by Malaysian companies in each reporting year. This is indicated by the highest average number of reporting incidences per year (592 or 20.9% of the maximum), compared to the ‘international guidelines only’ (45 or 8.3% of the maximum). The ‘Malaysian guidelines only’ had the lowest number of reporting incidences per year with an average of 36 (5.3%).

Panel A also shows the percentage change in CED over time based on absolute growth and relative growth, respectively (see Section 5.4.1.7). Between 2006 and 2008, both the percentage change based on absolute growth and relative growth show that items representing ‘both international and Malaysian guidelines’ had the highest growth in reporting. This follows by items representing ‘international guidelines only’ and last, ‘Malaysian guidelines only’. This result is consistent with the ranking based on average number of reporting incidences per year. However, the ranking for growth shifted for between 2008 and 2014. Both percentage change display that the highest incidences was reported by items in the ‘international guidelines only’, followed by ‘both international and Malaysian guidelines’. The last was ‘Malaysian guidelines only’.

In comparison to Yang and Farley (2016), there was not much difference between the percentage change based on absolute growth and relative growth in the sample of this thesis. For instance, between 2006 and 2008, percentage change based on absolute growth and relative growth for ‘international guidelines only’ were the same (4.4%). This means compared to the number of reporting companies for items in ‘international guidelines only’ in 2006, more than four percent companies would add the number of reporting for these items in 2008. This also indicates that more than four percent of non-reporting companies for these items in 2006, would report these items in 2008. Again, a reason for no difference between both change was due

to lower reporting level in the sample of this thesis as opposed to higher reporting level in Yang and Farley (2016).

Panel B extends the information in panel A by providing the average number of reporting companies per item. The 592 reporting incidences in ‘both international and Malaysian guidelines’ are equivalent to an average of 28 companies that provided disclosures for each item per year in this group. However, this only represents 20.9% of the 135 companies per year. In comparison, the average number of reporting companies for each item per year in the ‘international guidelines only’ was 11 (8%), whereas in the ‘Malaysian guidelines only’ it was 7 (5%). Both results in panel A and B therefore, indicate that companies in the sample favour reporting of items that show the convergence of the international and Malaysian guidelines, even though none of the sample companies disclosed adherence to GRI.

6.7 Consolidated Key Findings

This chapter analyses the patterns of CEDQty and CEDQ practices using a CED index that was developed based on the international and Malaysian guidelines for the purpose of this thesis (Chapter 5). The reporting patterns of CEDQty and CEDQ based on this index have been analysed from the perspectives of reporting medium, CEDQty and CEDQ overall scores, and content of CEDQty and CEDQ. Findings of these patterns support the notion that companies’ CED practices are dependent on the country’s context.

Results of the CED reporting medium were analysed based on the descriptive statistics to answer RQ1 and RQ2 (Chapter 1). The results indicate that Malaysian companies continuously use AR (annual reports) as their main reporting channel for CED, instead of SR (sustainability reports). In fact, there was no significant shift from the use of AR to SR in conveying CED information from 2006 to 2014.

Results regarding overall CEDQty and CEDQ were also used to answer RQ1 and RQ2 by using the ANOVA tests ($p < 0.05$). The results of overall CEDQty are related to RQ1, H1.1a and H1.1b. The results of the CEDQty overall score based on pooled data suggest that regardless of the media and year, the average CEDQty overall score was low (Table 6-2). However, yearly changes in 2006, 2008 and 2014 shows that there has been a slowly progressing state, indicated by an upward pattern in the average CEDQty overall score (Figure 6-3). This corresponds with upward patterns in the number of disclosure companies both having a high CEDQty overall score (Figure 6-4) and a high CEDQty score (Figure 6-6 and Table 6-5). These upward patterns also accord with a downward pattern of non-disclosure companies (Figure 6-8). The ANOVA tests provide high support to H1.1a that there was a significant difference in CEDQty overall score between 2006 and 2008 (Table 6-4). However, the difference in CEDQty overall scores between 2008 and 2014 was not significant, therefore rejects H1.1b.

Yearly changes of the average CEDQty overall score based on industry indicates that companies in the utilities industry have the highest score in each reporting year, compared to their counterparts in the energy and materials industries (Figure 6-9, Figure 6-11 to 6-13). The ANOVA tests validate the differences between industries by showing the utilities industry as the leader in the CEDQty overall score, followed by the energy industry and lastly, the materials industry.

The results of overall CEDQ are related to RQ2, H1.2a and H1.2b. The results of the overall CEDQ score based on pooled data show that regardless of the media and year, the average CEDQ overall score was low (Table 6-2). Yearly changes in 2006, 2008 and 2014 shows that there was a slowly upward pattern in the average CEDQ overall score (Figure 6-3). This upward pattern corresponds with upward patterns in the number of disclosure companies both having a high CEDQ overall score (Figure 6-5) and a high CEDQ score (Figure 6-7 and Table 6-6). The ANOVA tests provide high support to H1.2a that CEDQ overall score in 2008 was significantly different than in 2006. However, the difference in CEDQ overall score between

2008 and 2014 was not significantly different. This rejects H1.2b. These results were consistent with the results in CEDQty overall.

Yearly changes in the average CEDQ overall score based on the industry reveals that companies in the energy and materials industries have the lower score in each reporting year, compared to companies in the utilities industry (Figure 6-10 to 6-13). The ANOVA tests support this result by showing that there was a significant difference of CEDQ overall between different industries (Table 6-7). Similar to CEDQty overall, the results of CEDQ overall imply that the utilities industry was the leader in the reporting of CEDQ overall, followed by the energy industry and lastly, the materials industry.

Results of the content of CEDQty and CEDQ were analysed from the perspectives of dimension and item, and according to the international and Malaysian guidelines. While the former perspective (dimension and item) provides a further answer to RQ1 and RQ2, the latter (guidelines) answers RQ3. These analyses were based on descriptive statistics and ANOVA tests ($p \leq 0.05$).

In terms of CEDQty dimensions, the pooled data results show that of the six CEDQty dimensions, the reporting of CEDQty B (environmental actions and environmental performance indicators) made up the highest share of the CEDQty overall score (Table 6-3). This is attributed by the high number of items (11) contained in this dimension compared to the rest of the dimensions, which have the number of items ranging from two to five (Table 6-5). However, CEDQty A (environmental governance) had the highest average reported incidences per item (101) from all the six dimensions. This is equivalent to an average of 34 reporting companies per item. Among the five items in this dimension, the CEDQty A1 item (a statement on commitment to the protection of the environment) had the highest average reported companies (Table 6-2, 6-5 and 6-8).

Yearly changes in the average score of CEDQty dimension shows that there was an increasing pattern in all CEDQty dimensions over time, except for CEDQty C (Table 6-4). Specifically, the ANOVA tests provide high support for H1.1a that

scores of all CEDQty dimensions in 2008 were significantly different from 2006. However, the difference between 2008 and 2014 was significant only in CEDQty F, thus this provides limited support for H1.1b.

Subsequent analysis focuses on the average number of disclosure companies per item for each dimension. This analysis measures the percentage change based on relative growth. The results show that the changes from 2006 to 2008 in all CEDQty dimensions were higher than the changes from 2008 to 2014, except for CEDQty C (Table 6-8). The results imply that with exception of CEDQty C, on average, for each CEDQty item in each CEDQty dimension, the number of reporting companies was increasing over time, relative to the total 135 companies in each year. Detailed analysis by item shows that although in general, there was an upward pattern in the number of reporting companies over time, some CEDQty items have a decrease between 2008 and 2014. These items are CEDQty A2, B2, C1, C2, and E2 (Figure 6-17, 6-19, 6-21, 6-23, 6-25, and 6-27).

Analysis of CEDQty dimensions by industry shows that companies in the utilities industry have the highest score in each CEDQty dimension, followed by the energy and lastly the materials industry (Table 6-7). The ANOVA test supports this by indicating that the mean differences between the utilities and energy were significant in most of CEDQty dimensions except for CEDQty A. This is mainly because CEDQty A of the utilities industry in 2014 was slightly lower than the energy industry, and in contrast with that in 2006 and 2008 (Figure 6-14 to 6-16). With reference to the mean differences of the energy and materials industries, there were only significant in CEDQty A and E in each year of 2006, 2008 and 2014.

Meanwhile, results of the content of CEDQ by dimension based on pooled data reveal that, similar to CEDQty, of the six CEDQ dimensions, the reporting of CEDQ B (environmental actions and environmental performance indicators) made up the highest share of the CEDQ overall score (Table 6-3). Although the CEDQ B dimension had the highest average reported incidences per item (131), its yearly average score per company per item was only less than 2 (of the maximum score of

4) (Table 6-2). The highest yearly average score per company per item is evidenced in CEDQ C (environmental expenditures) with a score of less than 3 (of the maximum score of 4). Further analysis shows that on the yearly average companies disclosed per item however, displays that CEDQ A reported the highest CEDQ qualitative disclosure (33 companies in score 1-2), while CEDQ C had the highest CEDQ quantitative disclosure (7 companies in score 3-4) (Table 6-8).

Yearly changes in the average score of CEDQ dimension shows that there was an increasing pattern in all CEDQ dimensions over time, except for CEDQ C (Table 6-4). The ANOVA tests, however, only confirm that the significant increase between 2006 and 2008 was for CEDQ A, B and D dimensions, resulting in the acceptance of H1.2a. However, the difference between 2008 and 2014 in all dimensions was not significant, thus rejects H1.2b.

The analysis of changes based on the percentage of relative growth measured using the average number of disclosure companies per item reveal that changes of CEDQ qualitative (score 1-2) from 2006 to 2008 was higher (11%) than the changes from 2008 to 2014 (3%) (Table 6-8). The highest changes during the first period is evidenced in CEDQ A dimension (21%), while for the second period, CEDQ D and CEDQ F shared the same highest changes (6%).

Meanwhile, the changes based on relative growth in CEDQ quantitative (score 3-4) reveal that CEDQ B has the highest change from 2006 to 2008 (2%). The changes spanning 2008-2014 show that CEDQ E had the highest change (2%) of all the six dimensions. Although each CEDQ dimension has a different rate of change, both the results of qualitative and quantitative CEDQ with the exception of CEDQ C suggest that, on average, for each CEDQ item in each CEDQ dimension, the number of reporting companies was increasing over time, relative to the total 135 companies in each year. Detailed analysis by item shows that in general, there was an upward pattern in the number of reporting companies over time. However, between 2008 and 2014, some CEDQ items have a decreasing patterns. The items with a decreasing pattern in CEDQ qualitative are CEDQ A2, B2, C1, C2, C3 and E2

(Figure 6-18, 6-20, 6-22, 6-24, 6-26, and 6-28). Meanwhile, items with a decreasing pattern in CEDQ quantitative are CEDQ A2, B11, C1, C2, D1, F2 and F5.

Analysis of CEDQ dimension by industry illustrates that companies in the utilities industry have the highest score in each CEDQ dimension, followed by the energy and lastly the materials industry (Table 6-7). Nonetheless, the ANOVA results indicate that while the mean differences between the utilities and energy were significant in most of CEDQ dimensions, it was not significant in CEDQ A. This is mainly because CEDQ A of the utilities industry in 2014 was slightly lower than the energy industry, and in contrast with that in 2006 and 2008 (Figure 6-14 to 6-16). With reference to the mean differences of the energy and materials industries, the mean differences were only significant in CEDQ A, D and E, which due to differences in each year of 2006, 2008 and 2014.

Results of the content of CED items according to the Malaysian and international guidelines illustrate that the sample Malaysian companies were likely to report CED items that demonstrate the convergence of both guidelines. This is evidenced in the highest number of reporting incidences of items in 'both international and Malaysian guidelines' in each year of 2006, 2008 and 2014 (Table 6-9). This follows by items in 'international guidelines only' and the last is 'Malaysian guidelines only'. Further analysis by percentage change based on relative growth indicates that the same order persists between 2006 and 2008. Nevertheless, this order alters between 2008 and 2014. In particular, items in 'international guidelines only' have the highest further growth relative to full disclosure incidences by all companies. Next is items in 'both international and Malaysian guidelines' and finally items in 'Malaysian guidelines only'.

6.8 Summary

This chapter answers the first three research questions of this thesis by providing results of the reporting patterns of CED practices by Malaysian companies. These results revealed that there were low CEDQty and CEDQ in 2006, 2008, and 2014.

Despite this, the reporting of CEDQty and CEDQ were significantly different between 2006 and 2008, but not between 2008 and 2014. In addition, results indicated that there were changes in both the reporting of CEDQty and CEDQ by industry, dimensions and individual items. Among the three ESI sampled in this thesis, the utilities industry was the leader in both the overall CEDQty and CEDQ scores. In terms of CEDQty dimensions, the reporting of CEDQty B (environmental actions and environmental performance indicators) made up the highest share of the CEDQty overall score due to the high number of items contained in this dimension compared to the rest of the dimensions. However, the majority of companies in the sample preferred reporting on CEDQty A (environmental governance), with CEDQty A1 item (a statement on commitment to the protection of the environment) had the highest average reported companies. Among the six dimensions of CEDQty, between 2006 and 2008, changes in the average score of all the dimensions were significant, but between 2008 and 2014, the changes were significant only for CEDQty F (credibility). Similarly for CEDQ, companies favoured reporting the CEDQ A dimension, however in qualitative form, while they provided a more quantitative form for CEDQ C. Sample companies were also more concerned about reporting items that show convergence of the international and Malaysian guidelines, rather than either in the international or Malaysian guidelines. The following Chapter 7 presents the results of multivariate analysis that will answer the remainder of the research questions posited in Chapter 1. Further and deeper analysis of the results in this and the forthcoming chapter is provided in Chapter 8.

CHAPTER 7: MULTIVARIATE RESULTS

7.1 Overview

The previous chapter reported on the descriptive statistics for corporate environmental disclosure quantity (CEDQty) and quality (CEDQ). This chapter advances the analysis by focusing on factors that explain the varying levels of CEDQty and CEDQ. This analysis addresses RO3, that is aimed at the advancement of empirical analysis of the relationships between institutional changes, company-specific characteristics, and CEDQty and CEDQ in Malaysia.

Results in this chapter provide evidence for testing the framework in Chapter 4 by answering the following seven research questions. First, how to explain the pattern of CEDQty and CEDQ, and factors influencing this reporting in Malaysia, using a multi-theoretical perspective of institutional, Islamic accountability and resource-based theories? Second, what is the extent of the relationship, if any, between *CEDQty and Islamic influence*? If the relationship exists, how does it differ among overall CEDQty, different CEDQty dimensions and individual items? Third, what is the extent of the relationship, if any, between *CEDQ and Islamic influence*? If the relationship exists, how does it differ among overall CEDQ, different CEDQ dimensions and individual items? Fourth, what is the extent of the relationship, if any, between *CEDQty and corporate governance*? If the relationship exists, how does it differ among overall CEDQty, different CEDQty dimensions and individual items? Fifth, what is the extent of the relationship, if any, between *CEDQ and corporate governance*? If the relationship exists, how does it differ among overall CEDQ, different CEDQ dimensions and individual items? Sixth, what is the extent of the relationship, if any, between *CEDQty and financial performance*? If the

relationship exists, how does it differ among overall CEDQty, different CEDQty dimensions and individual items? Seventh, what is the extent of the relationship, if any, between *CEDQ and financial performance*? If the relationship exists, how does it differ among overall CEDQ, different CEDQ dimensions and individual items?

Section 7.2 presents the descriptive and univariate statistics of the continuous and categorical independent variables. Then, correlation analysis is used to measure the association between: (a) overall CEDQty and its six dimensions; (b) overall CEDQ and its six dimensions; and (c) overall CEDQty, CEDQ and their predictor variables. Such an examination is necessary in developing a better understanding of the institutional changes (represented by time factors Y2006 and Y2014) and company-specific characteristics contributing to CEDQty and CEDQ.

In Section 7.3, the multivariate results are generated using General Estimating Equation (GEE) forms of multivariate linear and logistic regression models, that recognise that the analysis involves panel data, in the SPSS software (see Section 5.6). The models (see Section 4.6) are tested first by using one multivariate linear regression model for each overall score of CEDQty and CEDQ. Second, the robustness tests are conducted to assess whether the model is highly sensitive to the alternative measures for a specific variable. One outcome of this process is the preferred combination of alternatives for the explanatory variables (see Section 5.5). Once the multivariate linear regression models for overall CEDQty and CEDQ are locked, then the preferred multivariate linear regression models are used for the overall score in each of the six dimensions of CEDQty and CEDQ. In total, there are 12 separate multivariate linear regression models for both CEDQty and CEDQ dimensions.

Third, 30 separate binary logistic regression models representing 30 individual items for CEDQty are investigated to highlight whether the predictor variables influence CEDQty. In addition, 30 separate ordinal logistic regression models representing 30 individual items for CEDQ are statistically examined to explain what influences the variation of CEDQ. However, some of the variables in models

of logistic regression suffer quasicomplete separation problems when the categorical dependent and independent variables have an empty cell. When a combination of each categorical dependent and explanatory variables has a large number of observations in one value, while the rest of the combinations are left with a small number, or without, observations in a different value, it will result in a strong correlation between each of the categorical dependent and explanatory variables. When this problem is encountered, this thesis reverts to a multiple linear regression instead of logistic regression. Despite this, the results of the remaining variables are not affected. Moreover, Zorn (2005) argued that the fixing of this problem is subject to researcher judgment because there is no one superior alternative over the others. Therefore, this thesis presents the significant predictor variables that influence the individual CED items, rather than the model fit, to compare these results with the results of overall scores of CEDQty and CEDQ.

This thesis uses the conventional 5% level of significance ($p \leq 0.05$) for both the one-tailed and two-tailed hypotheses in assessing the statistical significance of the predictor variables (Cohen, 1992). Despite this, all three of the most often used levels of statistical significance ($p \leq 0.10$; $p \leq 0.05$, $p \leq 0.01$) are reported. Since there are three types of regressions, in indicating the acceptance of each hypothesis, this thesis sets the hypothesis as highly, moderately or limitedly supported when the predictor variables are statistically significant at the 5% significance level. First, the hypothesis is highly supported when such a variable is statistically significant either in the overall CEDQty or CEDQ, or in at least five dimensions of CEDQty or CEDQ, or in at least 21 individual items of CEDQty or CEDQ. Second, the hypothesis is moderately supported when such a variable is statistically significant either in at least three dimensions of CEDQty or CEDQ, or in at least 11 individual items of CEDQty or CEDQ. Finally, the hypothesis is limitedly supported when such a variable is statistically significant either in less than three dimensions of CEDQty or CEDQ, or in less than 11 individual items of CEDQty or CEDQ, but more than none.

In evaluating the goodness of fit of the panel data linear regression models, the R^2 (coefficient of determination) produced by a panel data regression from the STATA statistical package is used. However, since there is no specific value for the acceptable level of R^2 (Hair et al., 2010), accordingly this thesis sets an R^2 greater than 0.50 as a strong explanatory power of the models, an R^2 between 0.50 and 0.20 as moderate, and R^2 less than 0.20 as weak.

Section 7.4 analyses the effect of institutional changes and Malaysian company-specific characteristics on CEDQty, while the effect on CEDQ is presented in Section 7.5. Section 7.6 provides consolidated key findings and Section 7.7 summarises the chapter.

7.2 Inferential Statistics

7.2.1 Descriptive and Univariate Statistics

This thesis has a full sample of 405 company-year observations which can be categorised as: (i) ‘CED Communicator’ (representing CED reporter: 80.25%), and (ii) ‘Non-CED Communicator’ (representing non-CED reporter: 17.25%) as shown in panel A, Table 7-1. Panel A also provides the statistics for the full sample (row 1), CED Communicator (row 2), Non-CED Communicator (row 3), and t -test results (row 4) for differences in the mean between CED Communicator and non-CED Communicator for each continuous independent variables including their alternative measures (INST, PRT2, LEV2 and SIZE2). Meanwhile, panel B documents the statistics related to categorical independent variables, including t -test results of CEDQty and CEDQ (column 4 and 5) and alternative measures (CC, D_BS, D_ID, TWOWOB). These t -tests compare the means of each CEDQty and CEDQ in two related groups of categorical independent variables.

Table 7-1: Descriptive and univariate statistics of company-specific characteristics

Panel A: Descriptive and univariate statistics of continuous independent variables				
	Min.	Max.	Mean	Std dev.
GOVT (n=405)	0	0.76	0.032	0.079
CED Communicator (n=325 or 80.25%)			0.033	
Non-CED Communicator (n=80 or 19.75%)			0.029	
<i>t</i> -value			-0.494	
XGOVT	0	0.74	0.043	0.134
CED Communicator (n=325 or 80.25%)			0.048	
Non-CED Communicator (n=80 or 19.75%)			0.022	
<i>t</i> -value			-2.095**	
INST	0	0.89	0.075	0.166
CED Communicator (n=325 or 80.25%)			0.081	
Non-CED Communicator (n=80 or 19.75%)			0.051	
<i>t</i> -value			-1.897*	
BS (no)	4	17	7.380	2.029
CED Communicator (n=325 or 80.25%)			7.434	
Non-CED Communicator (n=80 or 19.75%)			7.163	
<i>t</i> -value			-1.212	
ID	0.22	0.83	0.451	0.125
CED Communicator (n=325 or 80.25%)			0.460	
Non-CED Communicator (n=80 or 19.75%)			0.411	
<i>t</i> -value			-3.298***	
WOB	0	0.5	0.073	0.099
CED Communicator (n=325 or 80.25%)			0.076	
Non-CED Communicator (n=80 or 19.75%)			0.062	
<i>t</i> -value			-1.136	
PRT (%)	-3.19	3.49	0.261	0.563
CED Communicator (n=325 or 80.25%)			0.188	
Non-CED Communicator (n=80 or 19.75%)			0.279	
<i>t</i> -value			-1.336	
PRT2 (%)	-0.48	0.32	0.045	0.083
CED Communicator (n=325 or 80.25%)			0.049	
Non-CED Communicator (n=80 or 19.75%)			0.028	
<i>t</i> -value			-1.759*	
LEV (%)	0	0.81	0.095	0.130
CED Communicator (n=325 or 80.25%)			0.094	
Non-CED Communicator (n=80 or 19.75%)			0.100	
<i>t</i> -value			0.316	
LEV2 (%)	0	2.36	0.256	0.212
CED Communicator (n=325 or 80.25%)			0.252	
Non-CED Communicator (n=80 or 19.75%)			0.272	
<i>t</i> -value			0.807	

Panel A: Descriptive and univariate statistics of continuous independent variables (continued)

	Min.	Max.	Mean	Std dev.
SIZE (\$)	9.93	18.32	12.814	1.481
CED Communicator (n=325 or 80.25%)			12.969	
Non-CED Communicator (n=80 or 19.75%)			12.181	
<i>t</i> -value			-5.099***	
SIZE2 (\$)	6.83	17.37	12.414	1.593
CED Communicator (n=325 or 80.25%)			12.575	
Non-CED Communicator (n=80 or 19.75%)			11.762	
<i>t</i> -value			-4.576***	

Panel B: Descriptive and univariate statistics of categorical independent variables

	1	0	<i>t</i> -test results CEDQty	<i>t</i> -test results CEDQ
SHA (1= <i>Shari'ah</i> , 0=otherwise)	350 86.4%	55 13.6%	<i>t</i> =0.902	<i>t</i> =1.220
CHAIR (1=Muslim Chairperson, 0=otherwise)	237 58.5%	168 41.5%	<i>t</i> =0.887	<i>t</i> =0.934
CEO (1=Muslim CEO, 0=otherwise)	80 19.8%	325 80.2%	<i>t</i> =- 4.517***	<i>t</i> =- 4.534***
CC (1=Muslim Chairperson in addition to a Muslim CEO, 0=otherwise)	65 16.0%	340 84.0%	<i>t</i> =- 2.736***	<i>t</i> =-2.578**
CHAIRG (1=male Chairperson, 0=otherwise)	401 99.0%	4 1.0%	<i>t</i> =1.218	<i>t</i> =1.383
CEOG (1=male CEO, 0=otherwise)	394 97.3%	11 2.7%	<i>t</i> =-0.922	<i>t</i> =-1.821
D_BS (1=board size at least 8; 0=otherwise)	165 40.7%	240 59.3%	<i>t</i> =- 2.943***	<i>t</i> =- 3.518***
D_ID (1=independent non-executive directors are 1/3 or more of board size; 0=otherwise)	356 87.9%	49 12.1%	<i>t</i> =-0.292	<i>t</i> =0.303
TWOWOB (1=at least two women on boards; 0=otherwise)	36 8.9%	369 91.1%	<i>t</i> =- 3.091***	<i>t</i> =- 3.220***
IND1 (1=utilities industry; 0=otherwise)	30 7.4%	375 92.6%	<i>t</i> =- 6.150***	<i>t</i> =- 6.505***
IND2 (1=energy industry; 0=otherwise)	45 11.1%	360 88.9%	<i>t</i> =-1.012	<i>t</i> =-0.882
IND3 (1=materials industry; 0=otherwise)	330 81.5%	75 18.5%	<i>t</i> =5.000** *	<i>t</i> =5.245** *

Notes:

1. Significance level: * $p \leq 0.10$, ** $p \leq 0.05$, *** $p \leq 0.01$ (two-tailed test)

2. GOVT=proportion of government institutional ownership; XGOVT=proportion of non-government institutional ownership; INST=proportion of total institutional ownership; BS=board size; ID=proportion of independent board members; WOB=proportion of women on board; PRT=profitability based on ROE; PRT2=profitability based on ROA; LEV=leverage based on ratio of total long-term debt; LEV2=leverage based on ratio of total debt; SIZE=company size based on adjusted natural log of constant dollar total assets; SIZE2=company size based on adjusted natural log of constant dollar total sales; SHA=*Shari'ah* status; CHAIR=Muslim Chairperson; CEO=Muslim CEO; CC=a Muslim Chairperson in addition to a Muslim CEO; CHAIRG=a female Chairperson; CEOG=a female CEO; D_BS=1 if board size is 8, 0 if otherwise; D_ID=1 if independent directors at least 1/3 of board size, 0 if otherwise; TWOWOB=1 if at least two women on boards, 0 if otherwise; IND1=1 if utilities industry, 0 if otherwise; IND2=1 if energy industry, 0 if otherwise; IND3=1 if materials industry, 0 if otherwise.

From panel A, based on the full sample, the average government institutional ownership (GOVT) was 3.2%, the average non-government institutional ownership (XGOVT) was 4.3%, while the average total institutional ownership (INST) was 7.5%. The average INST, as measured by the proportion of total institutional ownership based on substantial shareholdings in this thesis, is far lower than those reported in other countries. For example, Barnea and Rubin (2010) who examined 2,641 US firms in 2001, reported a mean INST of 60%, and Wu et al. (2016) who examined Chinese firms listed in the Shanghai and Shenzhen Stock Exchanges between 2003 and 2011 reported an average INST of 8.9%. Lower institutional shareholdings in this thesis impose concerns as to whether total institutional ownership or the categorisation based on GOVT and XGOVT do have power in influencing CEDQty or CEDQ. This is because the average GOVT found in this thesis (3.2%) was higher than the studies of Eng and Mak (2003) in Singapore (2%), but lower than Haji and Ghazali (2013a) in Malaysia (5.5%), Ntim and Soobaroyen (2013) in South Africa (7.8%) and Muttakin and Subramaniam (2015) in India (10.9%). However, while all of these studies found that a significant positive association between GOVT and disclosures (see Section 4.5.3.2), GOVT was not significantly related to disclosures in Haji and Ghazali (2013a). A possible explanation for this difference could be due to the period of investigation and country context.

Comparing all the three variables of institutional ownership between the CED Communicators and Non-CED Communicators based on the *t*-test on differences of the mean between the two groups (Field, 2009), the results indicate that the differences of the mean of GOVT for both groups were not statistically significant. However, the differences of mean of XGOVT and INST between the CED Communicators and Non-CED Communicators were statistically significant at the 5% and 10% significance levels, respectively.

For board size (BS), the average BS of the full sample was seven directors, similar to other Malaysian studies which recorded an average of between seven to eight directors (Buniamin et al., 2011; Haji, 2013a; Haniffa and Hudaib, 2006; Said et

al., 2009). Jensen (1993) argued that BS greater than eight decreases the board effectiveness. However, a comparison to BS in other countries reveals that studies have documented a BS of ten and above and indeed have found a significant association between BS and disclosures (e.g. Frias-Aceituno et al., 2013; Rao et al., 2012).

In the full sample, the board independence (ID) as measured by the percentage of independent directors to total directors ranges between 22% to 83%. The average independent directors (ID) was 45.1%, indicating that the majority of companies in the sample have complied with the recommendation of the *Malaysian Code of Corporate Governance (MCCG)* in having at least one-third independent directors on boards. The average ID in this thesis was slightly higher than other studies in the Malaysian context (35.8% in Ghazali and Weetman's (2006) sample in 2001, and 42.6% in Esa and Ghazali's (2012) sample in 2005 and 2007). However, the ID was lower than the study of Garcia-Sanchez et al. (2015) in the Anglo-Saxon, Germanic and Latin countries where companies in the sample had an average ID of 72.6%.

In regard to women on boards (WOB), as measured by the proportion of women on boards to total directors, the full sample reveals a range between 0% to 50%. The average WOB of 7.3% was considered low in relation to the maximum, implying that on average although women's roles on boards have been acknowledged in Malaysia, it may be that not all companies are positioning women in strategic positions as exemplified by an overall there were 57% of companies without women on boards, even after the revised 2012 MCCG. An examination of yearly data suggests that half of companies in the sample did not incorporate the recommendation of the 2012 MCCG in increasing women on boards to 30% by 2016. Despite this, the average WOB in this thesis is consistent with the finding of the study by Said et al. (2013) in Malaysia (8%) and similar to cross-country studies. For example, using a sample of 3,874 listed companies in 2010 in 47 countries, Terjesen et al. (2016) reported an average WOB of 9%, while Amran et al. (2014), who did a study in the context of the Asia Pacific region, reported an average WOB of 7.8%. On the other hand, the results of Isidro and Sobral (2015) of large European

companies from 2010-2012 revealed a much higher average WOB (14%). Comparing the differences of mean of BS, ID and WOB between the CED Communicators and Non-CED Communicators, the *t*-test results showed they were significantly different for ID at the 1% significance level, but not for BS and WOB.

On the financial performance variables, the statistics show that profitability (PRT), as measured by return on equity (ROE), had an average value of 26.1% with a high variation ranging from -319% to 349%. For the alternative measure of profitability (PRT2) as measured by return on assets (ROA), the average PRT2 was 4.5%. An insight into the data informs that the average PRT and PRT2 decreased gradually from 2006 to 2014 with a much wider dispersion in the recent years, suggesting that some significant changes in the institutional environment had occurred between these periods and may interact with companies in the sample. As a comparison, the average ROE in this thesis was higher than the 9.3% finding of Alsaeed (2006) who investigated the 2003 non-financial disclosures of Saudi publicly-listed companies, and 14% in the study by Andrikopoulos and Kriklani (2013) who examined Danish companies in their 2009 sample. However, the ROA was lower than the findings of the Liao et al. (2015) cross-sectional data study for 2010 in the UK (9.2%) and the Muttakin et al. (2018) panel data study from 2005-2013 in Bangladesh (6.6%). Notwithstanding this, the difference of mean PRT2 (ROA) between CED Communicator and Non-CED Communicators was statistically significant at the 10% significance level while not statistically significant for PRT (ROE).

Turning to leverage, LEV measures the proportion of long-term debts to total assets while LEV2 measures the proportion of total debts to total assets. In this thesis, the average LEV was 9.5%. This value was far lower than 61% documented by Aerts et al. (2006) based on the examination of sample companies from Canada, France and Germany, and Cormier et al. (2011) who reported 23.2% from a sample of 137 companies listed on the Toronto Stock Exchange in 2005. On the alternative measures of leverage (LEV2), the average was 25.6%, but again this was lower than 33% discovered by Clarkson et al. (2008) who examined US companies. Similar to profitability, an examination of yearly data shows a larger range between the

minimum and maximum in more recent years, indicating that the changes may be associated with some significant changes surrounding the internal and external environment of sample companies, which may warrant further examination in the multivariate analysis. The differences of mean LEV and LEV2 between CED Communicator and Non-CED Communicators were not statistically significant at the 10% significance level.

As for the measurement of company size, SIZE is proxied by the adjusted natural logarithm of total assets. The alternative measure (SIZE2) is proxied by the adjusted natural logarithm of total sales. Both are in constant currency value. The average value of SIZE was almost identical to the average value of SIZE2. However, the range of SIZE from 9.93 to 18.32 was smaller than the range of SIZE2. Compared to the result of Said et al.'s (2013) in Malaysia using cross-sectional data of 120 companies in 2009, the value of SIZE in this thesis was smaller. Said et al. (2013) recorded a higher average of 18.8 and a wider range from 11.2 to 21.9. Meanwhile, Clarkson, Overell, et al. (2011) and Clarkson, Li et al. (2011) documented an average SIZE of 15 in a panel data study in Australia and US, respectively. Using SIZE2, Rupley et al. (2012) and Michelon and Parbonetti (2012) found the average SIZE2 was 8.47 and 22.6, respectively. Clearly, the average SIZE2 of Rupley et al. (2012) and Michelon and Parbonetti (2012) were different from this thesis as the former was lower, while the latter was much higher. The differences of mean SIZE and SIZE2 between CED Communicators and Non-CED Communicators in this thesis yielded that they were statistically significant at the 1% significance level.

These *t*-test results of continuous independent variables in panel A indicate that there were statistically significant differences in terms of XGOVT, ID, SIZE and SIZE2 between CED Communicators and Non-CED Communicators at a conventional level ($p \leq 0.05$). Clearly, CED Communicators were far larger in size with a higher proportion of non-government institutional ownership and more independent directors.

Panel B presents the *t*-test results that compare the means of each CEDQty and CEDQ in two related groups of categorical independent variables. First, on the

Islamic influence based on *Shari'ah*-compliant status (SHA), the majority of sample companies was categorised as a *Shari'ah*-compliant (86.4%). However, the *t*-test result indicates that the difference of the means of CEDQty and CEDQ between the *Shari'ah*-compliant and non-*Shari'ah*-compliant were not statistically significant. This finding, however, has both similarities and differences from the findings of Zainal et al. (2013) in Malaysia. Their study reported that the CEDQty and CEDQ reporting in 2005 and 2006 were significantly different between the *Shari'ah*-compliant and non-*Shari'ah*-compliant. However, from 2007 to 2009 there were not significant differences.

Second, regarding the embedded Islamic values associated with the top management of companies, companies with a Muslim Chairperson (CHAIR) illustrate that the majority of sample companies were under this group (58.5%). However, a group with a Muslim CEO (CEO) represents the minority of the sample (19.8%). Similarly, the group having a Muslim Chairperson in addition to a Muslim CEO (CC) denotes the minority of the sample (16.0%). Despite this, when comparing the difference of means of each CEDQty and CEDQ between two groups in each of these categorical variables, the *t*-test results demonstrate that the decision to report each CEDQty and CEDQ was statistically significant at the 1% significance level for CEO and CC, but not for CHAIR. These findings are not comparable to any existing studies as no prior study has been conducted to link the Muslim Chairperson or the Muslim CEO with CEDQty or CEDQ.

Third, the categorical corporate governance variables: a male Chairperson (CHAIRG) and a male CEO (CEOG) indicate that the majority of the sample was controlled by a male Chairperson (99.0%) and a male CEO (97.3%). In terms of the alternative measure of board size (D_BS), less than half of the sample company (40.7%) had a minimum eight board members, while for the alternative measure of board independence (D_ID), the majority of companies (87.9%) had at least one-third board members comprising independent directors. Turning to the measure of women on boards, a binary variable of at least two women on boards (TWOWOB) represents only 8.9% of the sample. The results of the *t*-test for the difference of

means of each CEDQty and CEDQ between the respective two groups illustrate that the decision to report CEDQty and CEDQ was statistically significant at the 1% significance level for D_BS and TWOWOB. The reporting of CEDQty and CEDQ did not depend on the CHAIRG, CEOG and D_ID.

Last, the results of the environmentally-sensitive industry (ESI) sectors show that of all the three industries, the utilities industry (IND1) had the lowest representation in the number of companies (7.4%), followed by the energy industry (IND2: 11.1%), and the materials industry (IND3: 81.5%). Comparing the difference of means of CEDQty and CEDQ between these industries, the *t*-test results demonstrate that there were statistically significant at the 1% significance level. The CEDQty and CEDQ of the utilities industry was lower than the average CEDQty and CEDQ of both the energy and materials industries. Meanwhile, the CEDQty and CEDQ of the materials industry was higher than the average CEDQty and CEDQ of both the utilities and materials industries.

These univariate results of categorical independent variables in panel B indicate that companies that report greater levels of CEDQty and CEDQ appear to be having a Muslim CEO (CEO), having a Muslim Chairperson in addition to having a Muslim CEO (CC), comprising at least eight board directors (D_BS), represented by at least two women on boards (TWOWOB), and in the materials industry (IND3).

7.2.2 Correlation Analysis

Correlation analysis measures the significance, strength and direction of the association between variables. Following Field (2009, p. 170), this thesis measures the strength of the correlation as weak ($\pm 0.1 \leq r \leq \pm 0.29$), moderate ($\pm 0.3 \leq r \leq \pm 0.49$), and strong ($\pm 0.5 \leq r \leq \pm 1$). Table 7.2 presents the bivariate correlation with the lower half reporting a Pairwise correlation between both CEDQty and CEDQ and their dimensions. In panel A, it is observed that all the CEDQty dimensions were strongly positively significantly correlated ($0.5 \leq r \leq 0.9$, $p \leq 0.05$) to the overall CEDQty. Of

these six dimensions, CEDQty B had the strongest correlation with the overall CEDQty, suggesting that this dimension has the most similar pattern of behaviour as the overall CEDQty measure.

Panel B also shows that all the CEDQ dimensions had positive significant correlations ($0.6 \leq r \leq 0.9$, $p \leq 0.05$) with the overall CEDQ. These high correlation values suggest that all measures are driven by a similar set of independent variables.

Table 7-2: Pairwise correlation matrix between CEDQty and CEDQ and their dimensions

Panel A: Pairwise correlation matrix for CEDQty and its dimension

	CEDQty	CEDQty A	CEDQty B	CEDQty C	CEDQty D	CEDQty E	CEDQty F
CEDQty	1.000						
CEDQty A	0.7647**	1.000					
CEDQty B	0.8814**	0.5468**	1.000				
CEDQty C	0.5680**	0.2579**	0.4522**	1.000			
CEDQty D	0.6901**	0.5555**	0.4974**	0.2820**	1.000		
CEDQty E	0.7315**	0.4968**	0.4924**	0.3843**	0.5138**	1.000	
CEDQty F	0.7013**	0.5180**	0.4630**	0.3931**	0.4289**	0.5026**	1.000

Panel B: Pairwise correlation matrix for CEDQ and its dimension

	CEDQ	CEDQ A	CEDQ B	CEDQ C	CEDQ D	CEDQ E	CEDQ F
CEDQ	1.000						
CEDQ A	0.7787**	1.000					
CEDQ B	0.9039**	0.6110**	1.000				
CEDQ C	0.6308**	0.3375**	0.4739**	1.000			
CEDQ D	0.7185**	0.6409**	0.5410**	0.3580**	1.000		
CEDQ E	0.7893**	0.5822**	0.5930**	0.4350**	0.5912**	1.000	
CEDQ F	0.7337**	0.5944**	0.5359**	0.4201**	0.5182**	0.5383**	1.000

Significance level: ** $p \leq 0.05$

Table 7.3 shows the Pairwise correlation between the independent variables with each other and with CEDQty and CEDQ. The results of the Pairwise correlation matrix indicate that of all the independent variables that were significantly correlated, the majority were moderately correlated ($r < 0.5$), except for: CC; INST; D_BS; TWOWOB; PRT2; LEV2; SIZE2; and IND3, which show a high correlation coefficient ($r > 0.5$) with some variables. These high correlations between: CC and CEO; INST and both GOVT and XGOVT; D_BS and BS; TWOWOB and WOB; PRT2 and PRT; LEV2 and LEV; SIZE2 and SIZE; and IND and SIZE were

expected. Aside from CC and CEO, and IND and SIZE, the rest of the variables had a high correlation because they represent alternative measures of particular variables.

On the high correlation between CC and CEO, it was likely be due to the fact that CEO being 1 (Muslim) is a sufficient condition for CC to be 1 (Muslim). CC is used as a proxy for having a Muslim CEO and a Chairperson. As many of the CEO (80.2%) were 0 (non-Muslim), therefore the sample will have many CC of 0. This is the reason for the CC and CEO being highly correlated.

IND and SIZE serve as control variables because most CED studies (e.g. Mahoney and Roberts, 2007; Rao et al., 2012) found that they are highly correlated with the dependent variables, but their associations are not central to the research hypotheses. Meanwhile, the high correlation between some explanatory variables indicates a possibility of multicollinearity, but it is not a sufficient condition for identifying multicollinearity problems (Baltagi, 2008). Thus, the Variance Inflation Factors (VIF) test was performed to exclude variables that had a value greater than 10 from the models because there was a multicollinearity problem. The final models are presented in the multivariate findings (see Table 7-4 to Table 7-5).

In regard to the correlation of Islamic influence variables with either CEDQty or CEDQ, only CEO and CC were positive and significant with both dependent variables, while SHA and CHAIR were not significant. These positive and significant results indicate that there is a greater likelihood of transparency through the reporting of CEDQty and CEDQ when companies are led by the Muslim CEO, or a combination of Muslim Chairperson and Muslim CEO. This is possible because the espoused Islamic values may increase their accountability, and accordingly this is likely to be demonstrated through a decision to provide transparent disclosures (Baydoun and Willet, 1997). However, the non-significance of SHA and CHAIR signals that both the *Shari'ah*-compliant status and a Muslim Chairperson may not necessarily be important factors in encouraging the propensity for reporting CEDQty and CEDQ. Moreover, when the Islamic values attribute of the Chairperson and CEO was translated into decision-making power, the results

suggest that the CEO inherent values in decision-making of CEDQty and CEDQ are perceived as superior to the Chairperson values. These findings, however, appear to contradict both the *Malaysian Companies Act 1965* and the *MCCG*, which position the Chairperson as having more authority than the CEO (Malaysian Government, 2006d; SCM, 2012).

Corporate governance attributes that had significant correlations with CEDQty and CEDQ were proportion of government institutional ownership (GOVT), proportion of non-government institutional ownership (XGOVT), board size (BS), and proportion of women on board (WOB). Similarly, the alternative measures of the abovementioned variables also had a significant correlation with CEDQty and CEDQ. The variables are proportion of total institutional ownership (INST), board size of at least eight directors (D_BS) and the presence of at least two women on boards (TWOWOB). The positive correlation between WOB and CEDQty is consistent with the study by Sundarasan et al. (2016) who reported a positive correlation between WOB and quantity of CSD. In contrast, board independence (ID) and its alternative measure of at least one-third independent directors from total board size (D_ID) were not significant.

Profitability (PRT) was the only financial variable that was significantly positively correlated with both CEDQty and CEDQ. On the other hand, leverage (LEV) was significantly positively correlated with CEDQ only. This positive correlation between LEV and CEDQ is consistent with the argument that higher leverage companies are likely to increase disclosures including CED, to signal their ability in meeting the requirement of debtholders (Garcia-Sanchez et al., 2011). However, this finding is inconsistent with the argument that a higher debt is likely to constrain resources for reporting CEDQ (Brammer and Pavelin, 2006a). All the alternative measures of profitability (PRT2) and leverage (LEV2) were not significantly correlated with either CEDQty or CEDQ.

In regard to the control variables, both measures of company size, as denoted by SIZE and SIZE2, were significantly positively correlated with both CEDQty and CEDQ. This indicates that the larger the company size, the higher the probability

of reporting CEDQty and CEDQ. With reference to industry, the correlation results indicate that the energy industry (IND2) sits in the middle and therefore is not significantly different to the average of the high and low reporting of CEDQty and CEDQ. Despite this, the positive correlation in IND1 suggests that the likelihood of providing CEDQty and CEDQ by companies in the utilities industry is high. In contrast, the negative correlation in IND3 implies that the tendency of reporting CEDQty and CEDQ from companies in the materials industry is low.

As for the changes in institutional pressures over time, the negative significant correlations of Y2006 with CEDQty and CEDQ indicate that the change in institutional pressures between 2006 and 2008 encouraged a greater propensity for reporting CEDQty and CEDQ in 2008 compared to 2006. The positive significant correlations of Y2014 with CEDQty and CEDQ reflect that the change in institutional pressures between 2008 and 2014 further compelled companies to increase their propensity for reporting CEDQty and CEDQ in 2014 as opposed to 2008.

Notably, the significance results in Table 7-1 and Table 7-3 are different. While Table 7-1 presents the significance difference between zero reporting or value of 0 and any number of reporting or value of 1, Table 7-3 presents the significance results of the correlation between actual number of reports and each variable.

The results in Table 7-3, however, are based on bivariate analyses, and therefore cannot sufficiently explain the impact of multiple variables on CEDQty and CEDQ practices in Malaysia. Consequently, the results should be read with caution because they do not take into consideration the joint effect of other variables. In order to conduct such an analysis, multivariate statistics are explored next to assess the relationship between the multiple factors on reporting CEDQty and CEDQ.

Table 7-3: Pairwise correlation matrix between CEDQty and CEDQ, and independent variables

		1	2	3	4	5	6	7	8	9	10
1	CEDQty	1.000									
2	CEDQ	0.954**	1.000								
3	SHA	-0.047	-0.069	1.000							
4	CHAIR	-0.045	-0.047	0.003	1.000						
5	CEO	0.264**	0.286**	-0.075	0.229**	1.000					
6	CC	0.152**	0.155**	-0.082	0.368**	0.881**	1.000				
7	CHAIRG	-0.077	-0.085	0.033	-0.076	-0.092	-0.084	1.000			
8	CEOG	0.027	0.042	0.022	0.007	-0.010	0.014	-0.017	1.000		
9	GOVT	0.260**	0.300**	-0.059	0.316**	0.176**	0.012	-0.231**	0.028	1.000	
10	XGOVT	0.269**	0.286**	-0.023	0.430**	0.374**	0.081	0.032	-0.008	0.157**	1.000
11	INST	0.341**	0.374**	-0.047	0.497**	0.386**	0.071	-0.084	0.007	0.603**	0.882**
12	BS	0.160**	0.198**	-0.096	0.078	0.034	-0.097	-0.006	0.054	0.185**	0.059
13	D_BS	0.154**	0.188**	-0.038	0.157**	0.130**	-0.057	-0.019	0.077	0.190**	0.054
14	ID	0.029	-0.010	0.002	0.063	0.104**	0.094	0.011	0.048	-0.055	-0.048
15	D_ID	0.017	-0.019	0.008	0.070	0.080	0.041	-0.037	0.078	-0.054	-0.012
16	WOB	0.159**	0.171**	-0.019	0.077	0.052	-0.022	-0.166**	-0.176**	0.106**	0.007
17	TWOWOB	0.188**	0.225**	-0.054	0.063	0.005	-0.142**	-0.057	-0.001	0.081	0.087
18	PRT	0.157**	0.207**	0.045	0.021	0.030	-0.030	0.028	0.044	0.079	0.054
19	PRT2	0.059	0.051	0.127**	-0.062	-0.039	-0.065	0.009	0.011	-0.029	0.085
20	LEV	0.095	0.148**	-0.091	0.251**	0.240**	0.040	0.041	-0.003	0.141**	-0.067
21	LEV2	0.018	0.024	-0.237**	0.197**	0.196**	0.053	0.040	0.022	0.054	-0.136**
22	SIZE	0.458**	0.486**	-0.032	0.250**	0.140**	-0.086	-0.021	0.039	0.384**	0.132**
23	SIZE2	0.420**	0.426**	0.016	0.153**	0.031	-0.105**	-0.010	0.096	0.347**	0.093
24	IND1	0.406**	0.482**	0.002	0.239**	0.133**	-0.125**	0.028	-0.069	0.275**	0.251**
25	IND2	0.056	0.049	0.003	0.377**	0.381**	0.122**	-0.044	0.059	0.136**	0.037
26	IND3	-0.319**	-0.364**	-0.003	-0.466**	-0.398**	-0.014	0.017	-0.001	-0.295**	-0.199**
27	Y2006	-0.361**	-0.270**	0.112**	0.004	0.005	0.032	0.018	0.022	0.035	0.007
28	Y2008	0.120**	0.073	0.097	-0.009	-0.010	0.000	0.071	-0.043	0.025	0.012
29	Y2014	0.242**	0.198**	-0.209**	0.004	0.005	-0.032	-0.088	0.022	-0.060	-0.018

Table 7-3: Pairwise correlation matrix between CEDQty and CEDQ, and independent variables (continued)

		11	12	13	14	15	16	17	18	19	20
11	INST	1.000									
12	BS	0.136**	1.000								
13	D_BS	0.134**	0.759**	1.000							
14	ID	-0.065	-0.314**	-0.165**	1.000						
15	D_ID	-0.035	-0.214**	0.030	0.476**	1.000					
16	WOB	0.056	0.054	0.046	-0.041	0.025	1.000				
17	TWOWOB	0.108**	0.314**	0.218**	-0.085	-0.150**	0.505**	1.000			
18	PRT	0.082	0.175**	0.126**	-0.030	-0.092	-0.030	0.070	1.000		
19	PRT2	0.055	0.077	0.102**	-0.063	0.032	0.005	-0.018	0.571**	1.000	
20	LEV	0.013	0.183**	0.108**	-0.067	-0.198**	-0.034	0.132**	0.273**	-0.027	1.000
21	LEV2	-0.085	0.150**	0.092	-0.031	-0.113**	-0.012	0.122**	0.037	-0.263**	0.543**
22	SIZE	0.289**	0.389**	0.298**	-0.111**	-0.090	0.040	0.152**	0.421**	0.151**	0.448**
23	SIZE2	0.240**	0.335**	0.264**	-0.094	-0.008	0.042	0.112**	0.340**	0.227**	0.219**
24	IND1	0.333**	0.310**	0.226**	-0.084	-0.155**	0.053	0.243**	0.266**	0.101**	0.330**
25	IND2	0.094	0.038	0.155**	0.132**	0.107**	0.070	0.028	0.053	-0.049	0.367**
26	IND3	-0.301**	-0.240*	-0.277**	-0.050	0.018	-0.093	-0.186**	-0.222**	-0.028	-0.519**
27	Y2006	0.022	0.025	0.011	-0.214**	-0.123**	-0.073	-0.018	0.052	0.117**	0.042
28	Y2008	0.022	0.007	0.021	-0.043	-0.043	-0.020	0.000	0.004	0.034	0.079
29	Y2014	-0.044	-0.032	-0.032	0.257**	0.166**	0.093	0.018	-0.056	-0.151**	-0.121**

Table 7-3: Pairwise correlation matrix between CEDQty and CEDQ, and independent variables (continued)

	21	22	23	24	25	26	27	28	29
21 LEV2	1.000								
22 SIZE	0.235**	1.000							
23 SIZE2	0.175**	0.861**	1.000						
24 IND1	0.057	0.443**	0.255**	1.000					
25 IND2	0.179**	0.298**	0.255**	-0.100**	1.000				
26 IND3	-0.183**	-0.540**	-0.378**	-0.593**	-0.742**	1.000			
27 Y2006	0.012	-0.031	-0.014	0.000	0.000	0.000	1.000		
28 Y2008	0.091	0.006	0.043	0.000	0.000	0.000	-0.500**	1.000	
29 Y2014	-0.103**	0.025	-0.029	0.000	0.000	0.000	-0.500**	-0.500**	1.000

Significance level: ** $p \leq 0.05$

7.3 Multivariate Analysis

The full models proposed in Section 4.6 are utilised to test the hypotheses in this thesis. In examining factors that drive CEDQty and CEDQ practices, this thesis uses three types of regression analysis. First, a panel data regression is utilised to model the overall and separate dimensions of CEDQty and CEDQ. For CEDQty, in total there were seven regression models: one model for the overall score of CEDQty and six models representing each of the CEDQty overall scores by dimension. Similarly, there were seven regression models for CEDQ: one model for the overall score of CEDQ, and the remaining six models representing each of the CEDQ overall scores by dimension.

Second, a binary logistic for panel data regression is employed to model the individual CEDQty items. The binary logistic regression is used when the outcome of each CEDQty item is a binary variable with only two values. In total, there are 30 separate binary logistic regressions for each individual CEDQty item across companies and years.

Third, an ordinal logistic for panel data regression is performed to model the individual CEDQ items. Since the outcome of each CEDQ item is an ordered categorical variable, the ordinal logistic regression is utilised. In total, there are 30 separate ordinal logistic regressions for each individual CEDQ item across companies and year.

In employing the panel data regression analyses, this thesis utilises the Generalised Estimating Equation (GEE) option in the SPSS software. The GEE, however, does not produce an R^2 , which measures the proportion of variance of the dependent variable that is explained by the independent variables in the model. Instead, the GEE provides QICC (Corrected Quasi Likelihood under Independence Model Criterion) in measuring goodness of fit. Since it is hard to interpret the model fit based on the QICC, this thesis obtained an R^2 from panel data regression produced by the STATA statistical package to provide an indication of the model fit.

For determining the acceptance or rejection of the hypothesis, this thesis uses the 5% significance level for both one-tailed and two-tailed hypotheses. Institutional changes between 2006 and 2008 (Y2006), *Shari'ah*-compliant status (SHA), a Muslim Chairperson (CHAIR), a Muslim CEO (CEO), female Chairperson (CHAIRG), female CEO (CEOG), and proportion of government institutional ownership (GOVT) are the variables with a one-tailed hypothesis, whereas the remaining variables are based on a two-tailed hypothesis. The possible impact on models of multicollinearity is tested by calculating Variable Inflation Factors (VIF) in the models representing overall reporting. In all cases the VIF are well below the level that would normally raise concerns about multicollinearity (values of less than 10, consistent with Hair et al. (2010)).

7.3.1 Panel Data Multivariate Linear Regression – CEDQty

Table 7-4 tabulates the panel data regression results of model 1.1 (see Section 4.6.1) to investigate the effect of institutional changes (H1.1c – H1.1d), Islamic influence (H2.1 – H4.1), corporate governance (H5.1 – H11.1), financial performance (H12.1 – H13.1), and control variables on the CEDQty overall score and scores by dimension of CEDQty. While this table shows variables that are significant up the 10% level, only those significant at at least the 5% significance level are discussed below. Accordingly, Section 7.4 presents the interpretation of all the hypotheses based on the results of multivariate regressions in this section along with the results of binary logistic regressions (Section 7.3.3).

In Table 7-4, on the CEDQty overall score (column 1), the model was statistically significant ($p \leq 0.01$) and had a moderate explanatory power ($R^2 = 0.4451$). Even though the explanatory power of the model was moderate, it was higher than the 21.1% and 34.2% reported by Haji (2013a) and Sundarasan et al. (2016) in their studies examining factors contributing to CSD quantity in Malaysia, respectively. Moreover, the results reveal that Y2006, Y2014, XGOVT, WOB, SIZE, IND2 and IND3 had a significant relationship with CEDQty at the 5% significance level.

Y2014, XGOVT, WOB and SIZE were significantly positive. In contrast, the relationships between Y2006, IND2 and IND3, and CEDQty were negatively significant.

All the six models of CEDQty by dimension (CEDQty A to CEDQty F) were statistically significant ($p \leq 0.01$) and had a moderate goodness of fit of an R^2 between 0.2652 and 0.3334.

CEDQty A dimension model (column 2) reported an R^2 of 0.3334. Clearly, Y2006 and SIZE were the only variables that had significant relationships with CEDQty A. However, while SIZE was positive, Y2006 was negative.

CEDQty B dimension model (column 3) had a moderate explanatory power ($R^2=0.3091$). The results show that SIZE was the only variable that had a significant positive effect on CEDQty B. However, the impact of Y2006, IND2 and IND3 on CEDQty B were negatively significant.

The model for CEDQty C dimension (column 4) had a moderate goodness of fit ($R^2=0.3259$). The results show that CEO, WOB and SIZE had a significant positive effect on CEDQty C. Surprisingly, Y2014 had a negative impact on CEDQty C, along with Y2006, IND2 and IND3.

CEDQty D dimension model (column 5) had a moderate explanatory power ($R^2=0.2652$). Y2014, GOVT, XGOVT and SIZE were positively related to CEDQty D at the 5% significance level. Conversely, Y2006 and IND3 had a significant negative association with CEDQty D.

The model for CEDQty E dimension (column 6) reported a moderate goodness of fit ($R^2=0.3234$). The variables WOB and SIZE had a statistically significant positive effect on CEDQty E. Interestingly, CHAIRG and ID were significant, along with Y2006 and IND3. However, these variables' relationships with CEDQty were negative.

CEDQty F dimension model (column 7) had a moderate explanatory power ($R^2=0.2847$). The regression results reveal that Y2014, XGOVT, BS, WOB and SIZE had a significant positive effect on CEDQty F, whereas Y2006, CHAIRG, IND2 and IND3 were significant, but with negative impact on CEDQty F.

7.3.2 Panel Data Multivariate Linear Regression – CEDQ

Table 7-5 provides the panel data regression results of model 1.1 (see Section 4.5.1) to investigate the effect of institutional changes (H1.2c – H1.2d), Islamic influence (H2.2 – H4.2), corporate governance (H5.2 – H11.2), financial performance (H12.2 – H13.2), and control variables on the CEDQ overall score and scores by the dimension of CEDQ. Again, while Table 7-5 shows variables that are significant up to the 10% level, only those significant at at least the 5% significance level are discussed below. Accordingly, Section 7.5 presents the interpretation of all the hypotheses based on the results of multivariate regressions in this section along with the results of ordinal logistic regressions (Section 7.3.4).

In Table 7-5, the model for the CEDQ overall score (column 1) was statistically significant ($p \leq 0.01$) and had a moderate explanatory power ($R^2=0.4546$). Compared to similar studies in Malaysia, Haji and Ghazali (2013a) who regressed corporate governance and financial variables on voluntary disclosure quality inclusive of CSR, reported a slightly higher explanatory power (49.6%), while Sulaiman et al. (2014) revealed much lower explanatory power (26.6%). Next, on the relationship between the CEDQ and the predictor variables, Y2006, Y2014, CHAIRG, XGOVT, WOB, SIZE, IND2 and IND3 had significant impact on CEDQ. While Y2014, XGOVT, WOB and SIZE had positive impact, the impact of Y2006, CHAIRG, IND2 and IND3 on CEDQ was negative.

All the six models of CEDQ by dimension (CEDQ A to CEDQ F) were statistically significant ($p \leq 0.01$) and had a moderate goodness of fit of R^2 between 0.3048 and 0.3878.

CEDQ A dimension model (column 2) reported an R^2 of 0.3543. While XGOVT, WOB and SIZE had a significant positive relationship with CEDQ A, Y2006 and CHAIRG were negatively significant with CEDQ A.

CEDQ B dimension model (column 3) had a moderate explanatory power ($R^2=0.3238$). The results show that Y2014, WOB and SIZE had a significant positive effect on CEDQ B. Meanwhile, the relationships of Y2006, IND2 and IND3 with CEDQ B were significant, however, negative.

The model for CEDQ C dimension model (column 4) had a moderate goodness of fit ($R^2=0.3158$). CEO and WOB had a significant positive effect on CEDQ C. Surprisingly, SIZE had no influence on CEDQ C. Meanwhile, Y2014 had a surprising negative impact on CEDQ C, along with Y2006, IND2 and IND3.

CEDQ D dimension model (column 5) had a moderate explanatory power ($R^2=0.3060$). Only XGOVT and SIZE had a significant positive effect on CEDQ D. However, the relationships of Y2006, IND2 and IND3 with CEDQ D were significantly negative.

The model for CEDQ E dimension (column 6) reported a moderate goodness of fit ($R^2=0.3878$). Six variables comprising GOVT, XGOVT, WOB, PRT, and SIZE had a statistically significant positive effect on CEDQ E. In contrast, Y2006, CHAIRG, BS, LEV, IND2 and IND3 had a significant negative effect on CEDQ E.

CEDQ F dimension model (column 7) had a moderate explanatory power ($R^2=0.3048$). The results reveal that both Y2014, XGOVT, BS, WOB and SIZE had a statistically significant positive effect on CEDQ F. However, Y2006, CHAIRG, IND2 and IND3 were statistically negative related to CEDQ F.

Table 7-4: Panel data regression results of CEDQty overall score and scores by dimension

Model	1	2	3	4	5	6	7	8
	CEDQty	CEDQty A	CEDQty B	CEDQty C	CEDQty D	CEDQty E	CEDQty F	VIF ^a
(Intercept)	-1.635	-0.906	-3.215	0.573	-0.383	1.098	-0.047	
Y2006	-3.304 ***	-0.882 ***	-1.392 ***	-0.175 ***	-0.250 ***	-0.377 ***	-0.229 ***	1.36
Y2014	0.716 **	0.140	0.347 *	-0.177 ***	0.109 **	0.030	0.235 ***	1.51
SHA	0.687 *	0.179 *	0.173	0.000	0.111 *	0.036	0.068	1.10
CHAIR	-0.140	0.085	0.059	0.029	-0.022	-0.057	-0.168	1.13
CEO	0.444	0.237 *	-0.061	0.180 **	-0.033	0.209 *	0.143	1.74
CHAIRG	-2.477 *	-0.510	0.261	0.027	-0.099	-1.357 ***	-0.558 **	1.12
CEOG	1.473	0.120	1.035	0.069	0.131	0.426	-0.196	1.06
GOVT	3.403	0.244	1.142	-0.527	0.782 **	0.890 *	0.493	1.38
XGOVT	4.439 **	0.766	1.290	-0.063	1.083 ***	0.571	0.905 **	1.39
BS	-0.107	0.634	-0.105 *	0.002	-0.013	-0.039	0.049 **	1.36
ID	-0.423	0.013	-0.299	-0.111	-0.048	-0.755 **	0.108	1.28
WOB	5.386 **	1.013 *	1.575	0.666 **	0.155	0.911 **	0.849 **	1.10
PRT	0.255	0.065	0.029	-0.033	0.025	0.123 *	-0.034	1.29
LEV	-3.096 *	-0.766 *	-1.406	-0.368	-0.256	-0.605	-0.072	1.69
SIZE	0.994 ***	0.171 ***	0.506 ***	0.064 **	0.087 ***	0.136 ***	0.092 **	2.07
IND2	-4.744 ***	0.098	-2.305 ***	-1.155 ***	-0.287	-0.512 *	-0.518 **	2.62
IND3	-4.665 ***	-0.135	-1.574 ***	-1.078 ***	-0.388 **	-0.884 ***	-0.459 **	3.80
QICC ^b	5492.99	363.85	1514.94	135.29	154.23	284.01	240.05	
R Squared ^c	0.4451	0.3334	0.3091	0.3259	0.2652	0.3234	0.2847	

Significance level: * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$

1. (a) VIF from panel data regression of overall CEDQty using STATA statistical package.

2. (b) This QICC was obtained from the Generalized Estimating Equation (GEE) in SPSS.

3. (c) This R squared was not obtained from the GEE but rather from a panel data regression of STATA.

Table 7-5: Panel data regression results of CEDQ overall score and scores by dimension

Model	1	2	3	4	5	6	7	8
	CEDQ	CEDQ A	CEDQ B	CEDQ C	CEDQ D	CEDQ E	CEDQ F	VIF ^a
(Intercept)	-1.037	-1.004	-7.012	2.522 *	-1.457	1.669	-0.002	
Y2006	-4.945 ***	-1.047 ***	-2.235 ***	-0.336 ***	-0.349 ***	-0.559 ***	-0.419 ***	1.36
Y2014	1.369 **	0.127	0.865 **	-0.392 ***	0.055	0.239	0.403 ***	1.51
SHA	0.727	0.049	0.539	-0.287	0.048	-0.060	0.113	1.10
CHAIR	-0.625	0.181	-0.125	0.073	-0.030	-0.059	-0.302	1.13
CEO	0.813	0.263	-0.026	0.543 ***	-0.024	0.244	0.290	1.74
CHAIRG	-5.758 **	-1.262 **	0.278	-0.143	0.189	-2.941 ***	-1.398 ***	1.12
CEOG	5.264	0.238	2.725	0.903	0.363	1.415	0.103	1.06
GOVT	7.346	0.674	2.980	-1.564	1.041 *	2.297 **	1.627 *	1.38
XGOVT	8.551 **	2.292 ***	1.610	0.804	1.758 ***	1.685 **	1.706 **	1.39
BS	-0.206	1.131 *	-0.603	-0.031	-0.017	-0.108 **	0.084 **	1.36
ID	-1.034	0.032	-0.120	-0.443	-0.031	-1.183	0.016	1.28
WOB	15.408 ***	2.133 ***	5.435 **	2.914 ***	0.774	2.598 ***	1.755 **	1.10
PRT	0.795	0.063	0.377	-0.039	-0.033	0.303 **	-0.025	1.29
LEV	-5.440	-0.854	-1.570	-1.008	-0.839 *	-1.514 **	-0.386	1.69
SIZE	1.814 ***	0.260 ***	0.961 ***	0.099	0.192 ***	0.329 ***	0.167 **	2.07
IND2	-13.031 ***	-0.397	-5.310 ***	-3.538 ***	-0.636 **	-1.761 ***	-1.035 **	2.62
IND3	-12.949 ***	-0.677	-4.131 ***	-3.225 ***	-0.930 ***	-2.382 ***	-0.933 **	3.80
QICC ^b	23586.56	755.22	6422.99	841.18	357.21	1098.59	776.54	
R Squared ^c	0.4546	0.3543	0.3238	0.3158	0.3060	0.3878	0.3048	

Significance level: * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$

1. (a) VIF from panel data regression of overall CEDQ using STATA statistical package.

2. (b) This QICC was obtained from the Generalized Estimating Equation (GEE) in SPSS.

3. (c) This R squared was not obtained from the GEE but rather from a panel data regression of STATA.

7.3.3 Panel Data Multivariate Binary Logistic Regression – CEDQty

Table 7-6 presents the summary of panel data binary logistic regression results for CEDQty individual items at the 5% significance level. These regressions were undertaken to assess convergence and divergence of the significant explanatory variables with that in Section 7.3.1. In total, there were 30 binary logistic regression models, corresponding to 30 CEDQty individual items. When a quasicomplete separation problem was encountered, this thesis reverted to a multiple linear regression. However, since there was zero disclosure for items B9 and F1, only 28 models were examined.

This table is quite revealing in several ways. First, in regard to institutional changes over time, it is apparent that the models supported that there was a significant difference in institutional changes between 2006 and 2008 (Y2006), and between 2008 and 2014 (Y2014). The significant negative coefficient for 19 CEDQty items in Y2006 indicates that the change in institutional pressures between 2006 and 2008 had encouraged Malaysian companies to have a higher propensity to report 19 specific CEDQty items in 2008 compared to 2006. Meanwhile, the significant positive coefficient of Y2014 with seven CEDQty items (4 new items) implies that the change in institutional pressures in 2014 had further increased their propensity to report three existing and four new CEDQty items compared to 2008. However, the negative relationship of Y2014 with one CEDQty item reflects that the same change in institutional pressures between 2008 and 2014 had reduced the propensity to report one existing CEDQty item in 2014 as opposed to 2008.

Second, for each of the Islamic influence variables, few models were significant. Specifically, companies with *Shari'ah*-compliant status (SHA) had a statistically significant positive influence on the propensity to report the CEDQty A1, A2 and B6 items when compared to companies without *Shari'ah*-compliant status. Companies led by a Muslim Chairperson (CHAIR) had a statistically significant positive influence on CEDQty B10 and E4 items when compared to a non-Muslim

Chairperson. Companies led by a Muslim CEO (CEO) also had a statistically significant positive influence on the propensity to report the CEDQty C2, E2, F2 and F5 items when compared to a non-Muslim CEO.

Third, with reference to corporate governance attributes, companies led by a female Chairperson (CHAIRG) had a statistically higher propensity to report CEDQty E1, E2, E3, F2 and F4 items when compared to companies led by a male Chairperson. Meanwhile, companies led by a female CEO had a statistically higher propensity to report CEDQty C2 item, as opposed to a male CEO.

As for institutional ownership, i.e., the proportion of government institutional ownership (GOVT) and proportion of non-government institutional ownership (XGOVT), the relationships of these variables with CEDQty were positively significant. However, GOVT only improved the propensity to report five CEDQty items: B6, B7, B10, E2 and F4. Meanwhile, XGOVT influenced the propensity to report seven CEDQty items: A1, B6, B11, D1, D2, E4 and F4. Notably, both GOVT and XGOVT had jointly increased the propensity to report the CEDQty F4 item.

Referring to board composition, clearly, board size (BS) and the proportion of women on the boards (WOB) had a contrasting direction of influence on the propensity to report CEDQty items. BS had a significant and negative influence on the propensity to report CEDQty B8 and E4 items. This implies that as board size increases, the propensity for reporting item B8 and E4 decreases. Conversely, WOB had a significant and positive influence on the propensity to report CEDQty A5 and E3 items. This indicates that as the percentage of women on boards increases, the probability of reporting item A5 and E3 also increases. Meanwhile, the proportion of independent directors on boards (ID) was found to be significant relationship, however, positive with CEDQty A2 and negative with CEDQty E3.

Fourth, there was no significant relationship of either profitability (PRT) or leverage (LEV) with any CEDQty items, indicating that both measures of financial performance were not relevant in influencing the propensity to report CEDQty individual items.

Finally, as for the control variable, there was a significant positive relationship between company size (SIZE) and 15 CEDQty items. This suggests that the bigger the company, the higher the propensity to report these 15 items. In regards to industry, companies in the energy industry (IND2) had a significantly lower propensity to report 11 CEDQty items than companies in the utilities industry (IND1). Similarly, companies in the materials industry (IND3) had a statistically lower propensity to report 12 CEDQty items than companies in the utilities industry (IND1). Notably, these IND2 and IND3 shared significance for seven CEDQty items (A4, B3, B4, B7, C1, C2, C3).

Table 7-6: Summary of binary logistic regression results for CEDQty by explanatory variables

Explanatory Variables	Positive significant relationship	Negative significant relationship	Total models significant
Y2006 ¹	-	A1 - A2, A5, B1 - B5, B10 - B11, C1 - C2, D1, E1 - E4, F2 - F3	19
Y2014	A3, B4, B10, D2, F2, F4 - F5	C1	8
SHA	A1, A2, B6	-	3
CHAIR	B10, E4	-	2
CEO	C2, E2, F2, F5	-	4
CHAIRG	-	E1 - E3, F2, F4	5
CEOG	-	C2	1
GOVT	B6, B7, B10, E2, F4	-	5
XGOVT	A1, B6, B11, D1 - D2, E4, F4	-	7
BS	-	B8, E4	2
ID	A2	E3	2
WOB	A5, E3	-	2
PRT	-	-	0
LEV	-	-	0
SIZE	A1, A5, B1 - B2, B4 - B7, C1, D1 - D2, E2 - E3, F4 - F5	-	15
IND2		A4, B3 - B4, B7, B11, C1 - C3, F4	11
IND3	-	A4, B3 - B4, B7, C1 - C3, D2, E2 - E4, F5	12

Significance level: ** $p \leq 0.05$

¹ The negative coefficient in the statistical analysis indicate a positive association between the institutional changes from 2006 to 2008 and items of CEDQty. This is because the institutional changes is measured from 2008 (base year) to 2006, rather than from 2006 to 2008.

7.3.4 Panel Data Multivariate Ordinal Logistic Regression - CEDQ

Table 7-7 provides the summary of panel data ordinal logistic regression results for CEDQ individual items at the 5% significance level. These regressions were undertaken to assess the convergence and divergence of the significant explanatory variables in comparison with those in Section 7.3.2. In total, there were 30 ordinal logistic regression models, corresponding to 30 CEDQ individual items. Again, when a quasicomplete separation problem was encountered, this thesis reverted to

a multiple linear regression. However, as there was no disclosure for items B9 and F1, only 28 models were observed.

The results from this table reveal that the institutional changes (represented by Y2006 and Y2014) were significant in influencing the quality of reporting of CEDQ items. Specifically, the results of institutional changes in Y2006 show that companies in the sample had a significant negative relationship with 17 CEDQ items. This signifies that the change in institutional pressures between 2006 and 2008 had increased quality of reporting of these 17 CEDQ items in 2008 compared to 2006 of the Malaysian companies. The findings also show that institutional changes in Y2014 had a significant positive influence on six CEDQ items (3 new items) in 2014 compared to 2008, and concurrently had a significant negative influence on CEDQ C1 item in 2014 compared to 2008. This implies that the change in institutional pressures between 2008 and 2014 had a further positive impact on limited CEDQ items in 2014 compared to 2008, however, the impact was not as strong as the impact between 2006 and 2008.

In reference to the Islamic influence, surprisingly companies with *Shari'ah*-compliant status (SHA) had no influence on any of the CEDQ items. However, interestingly, companies led by a Muslim Chairperson (CHAIR) had a statistically significant positive influence on CEDQ A2, B8 and E4 items. Companies led by a Muslim CEO (CEO) had a statistically significant positive influence on more CEDQ items compared to companies led by CHAIR. These items were CEDQ A1, B8, C1, C2 and F2, indicating that companies led by a Muslim CEO had more impact on CEDQ when compared with companies led by a non-Muslim CEO.

With regard to corporate governance, the results of companies led by a female Chairperson (CHAIRG) show that the sample companies had a statistically higher quality of reporting of seven CEDQ items: A3, BA, E1, E2, E3, F2 and F5, when compared to companies led by a male Chairperson. Companies led by a female CEO (CEOG) had a statistically significant positive influence on the quality of reporting of CEDQ B2 and C2 items as opposed to companies led by a male CEO.

When assessing the influence of CHAIRG and CEOG, the above results demonstrated that companies led by female Chairperson report more CEDQ items compared to companies led by a female CEO.

The results of the proportion of government institutional ownership (GOVT) reveal that this variable had a statistically significant positive influence on six CEDQ items. The proportion of non-government institutional ownership (XGOVT) had a statistically significant positive influence on nine CEDQ items. These positive results of GOVT and XGOVT imply that higher levels of these types of ownership improved the quality of reporting of different CEDQ items. However, XGOVT also had a statistically significant negative influence on CEDQ A4 and A5 items, indicating that concurrently XGOVT had reduced the quality of reporting of these specific CEDQ items.

On board composition, the association of board size (BS) and the proportion of women on the boards (WOB) with CEDQ individual items had a contrasting influence, similar to CEDQ individual items. BS had a significant and negative influence on four of CEDQ items: B8, C1, E2 and E4. This indicates that as board size increases, quality of reporting of these CEDQ items decreases. In contrast, WOB had a significantly positive influence on six CEDQ items: B1, C1, C2, D2, E2 and E3. This implies that the quality of reporting of these six items increases when the proportion of women on boards increases. As for the proportion of independent directors on boards (ID), the results were mixed. Whereas ID had a statistically significant positive influence on CEDQ A2 only, it had a significant negative influence on CEDQ B8 and C2.

Although both measures of financial performance had no influence on CEDQ items, profitability (PRT) had a significant and positive influence on CEDQ E3 item. This indicates that companies with higher profitability are likely to increase their quality of reporting of CEDQ E3 item. Conversely, leverage (LEV) had a significant and negative influence on three CEDQ items: A4, B3 and E4. This

implies that higher leverage companies are likely to decrease their quality of reporting of these specific items.

For the control variables, there was a significant positive relationship between company size (SIZE) and 17 CEDQ items. This suggests that the bigger the company, the more likely that this company will report CEDQ. In regard to industry, companies in the energy industry (IND2) and in the materials industry (IND3) had a significantly lower quality of reporting of CEDQ on the same 14 items when compared to companies in the utilities industry (IND1). Concurrently, companies in IND2 are likely to have a higher CEDQ B5 when compared with companies in IND1. These results suggest that companies in the utilities industry are likely to have the highest quality of reporting in these 14 specific items among the sample industries in this thesis.

Table 7-7: Summary of ordinal logistic regression results for CEDQ by explanatory variables

Explanatory Variables	Positive significant relationship	Negative significant relationship	Total models significant
Y2006 ¹	-	A1 - A2, B1 - B4, B8, B10 - B11, C1 - C2, D1, E1, E3 - E4, F2 - F3	17
Y2014	A3, B4, B10, F2, F4 - F5	C1	7
SHA	-	-	0
CHAIR	A2, B8, E4	-	3
CEO	A1, B8, C1 - C2, F2	-	5
CHAIRG	-	A3, B1, E1 - E3, F2, F4	7
CEOG	-	B2, C2	2
GOVT	B1, B7, B10, E2, F4 - F5	-	6
XGOVT	A1 - A2, B6 - B7, D1 - D2, E3 - E4, F4	A4 - A5	11
BS	-	B8, C1, E2, E4	4
ID	A2	B8, C2	3
WOB	B1, C1 - C2, D2, E2 - E3	-	6
PRT	E3	-	1
LEV	-	A4, B3, E4	3
SIZE	A1, A3, B1 - B4, B6 - B7, C1, D1 - D2, E2 - E4, F2, F4 - F5	-	17
IND2	B5	A4 - A5, B3 - B4, B7, B11, C1 - C3, D2, E1 - E3, F4	15
IND3	-	A3 - A4, B3 - B4, B7, B11, C1 - C3, D2, E1 - E3, F4	14

Significance level: ** $p \leq 0.05$

¹ The negative coefficient in the statistical analysis indicate a positive association between the institutional changes from 2006 to 2008 and items of CEDQty. This is because the institutional changes is measured from 2008 (base year) to 2006, rather than from 2006 to 2008.

7.3.5 Robustness Analysis

Robustness analysis was undertaken to provide a reasonable assurance of the main findings of the overall scores of CEDQty and CEDQ (column 1, Table 7-4 and Table 7-5) and to assess the sensitivity of the variables used in the multivariate regression analysis to other measures of the same variables. This involved replacing ten variables with eight alternative measures. These ten variables were: company size (SIZE), profitability (PRT), leverage (LEV), board size (BS), proportion of

independent board members (ID), proportion of women on boards (WOB), proportion of government institutional ownership (GOVT), proportion of non-government institutional ownership (XGOVT), a Muslim Chairperson (CHAIR) and a Muslim CEO (CEO). For ease of comparison, the main finding of each CEDQty and CEDQ was reproduced in column 1 (Table 7-8 and Table 7-9), with these alternative measures in column 2 to column 9 of the same tables. This analysis was only applied to the overall measures of CEDQty and CEDQ.

7.3.5.1 Measures of Company Size: SIZE to SIZE2

The main results reported that company size (SIZE) was significantly related to both the CEDQty and CEDQ. An insight into the data revealed that 45% of the observations had more than average total assets and were thus referred to as larger sized companies. To confirm that larger companies are more inclined to report CEDQty and CEDQ, this thesis re-ran the regression analysis by replacing SIZE, as measured by the adjusted natural logarithm of total assets in constant currency term, with SIZE2, as measured by the adjusted natural logarithm of total sales in constant currency term. The review of literature has shown that the latter measure of company size also has a significant positive effect on CED (and CSD) (e.g. Patten, 2002; Wiseman, 1982). Since the data for this thesis is panel data, the original total sales data were transformed into the adjusted natural logarithm of constant dollar total sales to control for both the inherent limitation of time-series data and non-linear effects.

As reported in Table 7-8 and Table 7-9 (column 2), the coefficients of SIZE remained statistically significantly positive on CEDQty and CEDQ at the 1% significance level. These results confirm the main results that larger companies report more CEDQty and CEDQ than smaller companies.

Results of the other variables in the alternative CEDQty model were similar to the main findings, except for the statistical significance of Y2014. While this variable was statistically significant at the 5% level in the main finding, it was significant at the 1% significance level in the alternative model. Meanwhile, the R^2 of the

alternative model rendered a slightly higher value than in the main finding (0.4451 vs 0.4517).

Results of the other variables in the alternative CEDQ model were similar to the main findings, except for the statistical significance of Y2014 and XGOVT. Y2014 had a statistical significance level of 1% in the alternative model as opposed to the 5% significance level in the main finding. Conversely, XGOVT in the main finding showed a much higher statistical significance level of 5% compared to the 10% level in the alternative model. Meanwhile, the R^2 of the alternative model of CEDQ was slightly higher than the main finding (0.4546 vs 0.4583).

7.3.5.2 Measures of Profitability: PRT to PRT2

The main findings showed that profitability, as measured by return on equity, was not significantly related to both CEDQty and CEDQ in all reporting years. In order to confirm the credibility of the main findings, this thesis repeated the regression models using return on assets as an alternative measure of profitability (PRT2). A similar measure was employed by Ben-Amar and McIlkenny (2015), and Rupley et al. (2012). Using a logit regression, Ben-Amar and McIlkenny (2015) found that return on assets had a positive significant relationship to climate-change disclosure decision, however at the 10% significance level. In contrast, Rupley et al. (2012) discovered that return on assets had no influence on CEDQ.

The results of the alternative measure in this thesis are consistent with the results of the main findings that profitability had no influence on both CEDQty and CEDQ (column 3, Table 7-8 and 7-9) and the study based in China (see Yang et al., 2015). These results, however, contradicted the study of Giannarakis (2014b) who argued that the higher the profitability of a company, the higher its environmental disclosure. The reason for this is that the engagement in environmental activities including disclosures is costly. Thus, companies require resources of funds to implement such activities. Profitability being one, could enable higher companies to provide more CEDQty and CEDQ than companies with lower profitability. Despite this, the results of this thesis failed to find such a relationship.

Results of the other variables in both the alternative CEDQty and CEDQ models were similar to the main findings of CEDQty and CEDQ. The R^2 of the main finding of CEDQty was slightly lower than the alternative model (0.4451 vs 0.4465). In contrast, the R^2 of the main finding of CEDQ was slightly higher than the alternative model (0.4546 vs 0.4465).

7.3.5.3 Measures of Leverage: LEV to LEV2

In the main findings, companies with more leverage (LEV), as measured by the ratio of long-term debts to total assets, had a negative and significant influence at the 10% level. However, since this thesis used the 5% significance level, LEV was reported as having no influence on CEDQty. Similarly, LEV had also no influence on CEDQ. Thus, in validating this result, this thesis employed LEV2, as measured by the ratio of total debts to total assets. Past research, however, had shown conflicting results on the use of this measure on CSD (e.g. Clarkson, Li, et al., 2011; Muttakin and Subramaniam, 2015; Stanny and Ely, 2008).

The results of the alternative measure on CEDQty and CEDQ models were consistent with the main findings that leverage had no influence on both CEDQty and CEDQ (column 4, Table 7-8 and 7-9). Results of the other variables in the alternative CEDQty model were similar to the main finding. The exceptions were for the significance level of Y2014, CHAIRG and WOB variables. In the main finding, CHAIRG was significant at the 10% level, Y2014 and WOB were significant at the 5% level, whereas in the alternative model, CHAIRG was significant at the 5% level and both Y2014 and WOB were more significant at the 1% level. Finally, the R^2 of the main finding of CEDQty was slightly higher than the alternative model (0.4546 vs 0.4373).

Meanwhile, the results of the other variables in the alternative CEDQ model were consistent with the main finding. However, the R^2 of the main finding was slightly higher than the main findings (0.4546 vs 0.4516).

7.3.5.4 Measures of Board Size: BS to D_BS

Results of the main findings using a continuous data of board size (BS) revealed that BS had no influence on both CEDQty and CEDQ. A closer examination on the data showed that the average BS of the sample was seven directors in the full sample, as well as in the sub-sample of CED Communicators and Non-CED Communicators. Despite this, the BS that ranges from four to 17 directors could possibly explain the insignificant effect of BS on CEDQty and CEDQ. Other studies have reported that companies with large BS have a significant association with disclosures (e.g. Frias-Aceituno et al., 2013; Rao et al., 2012).

Based on the above, this thesis re-ran the regression analysis using a dummy variable as an alternative measure of BS (D-BS). Originally, D_BS is coded as 1 for large BS (>8 directors) and 0 for otherwise. The cut-off point of eight directors was selected because Jensen (1993) argues that this is an ideal size for boards, and when the BS exceeds eight directors, it becomes ineffective. However, the results (not tabulated) suggest a non-significant relationship with CEDQty and CEDQ. Thus, the D_BS was then modified to include eight directors as large BS (≥ 8 directors). Moreover, other studies found that the average BS in Malaysia has been between seven and eight directors (Haniffa and Hudaib, 2006; Said et al., 2009). Thus, it is important to include eight directors as large BS.

The results of the alternative measure validated the results of the main findings that BS had no influence on CEDQty and CEDQ (column 5, Table 7-8 and 7-9). The substitution of D_BS in both the CEDQty and CEDQ models maintained the results of other variables. Finally, the R^2 of each the main model of CEDQty and CEDQ was slightly higher than its respective alternative model (0.4451 vs 0.4426; and 0.4546 vs 0.4527).

7.3.5.5 Measures of Board Independence: ID to D_ID

The results of the main findings suggest that companies with a high proportion of independent directors (ID) had no influence on CEDQty and CEDQ. In validating

these results, a dummy variable of ID (D_ID) was created. D_ID was coded as 1 when companies have at least one-third ID on boards, in compliance with the recommendation of the *MCCG* ($\geq 1/3$ ID to BS) and 0 for otherwise.

The results of the alternative measure validated the non-significant effect of ID on CEDQty and CEDQ in the main findings (column 6, Table 7-8 and 7-9). Similarly, the results of other variables in the alternative CEDQty and CEDQ models were identical. Finally, the R^2 of each the main finding of CEDQty and CEDQ was slightly higher than the alternative model of CEDQty and CEDQ, respectively (0.4451 vs 0.4449; and 0.4546 vs 0.4544).

7.3.5.6 Measures of Women on Boards: WOB to TWOWOB

The results of the main findings suggest that companies with a high proportion of women on boards (WOB) had a significant positive influence on CEDQty and CEDQ. In validating these results, this thesis uses an alternative measure of the presence of at least two women on boards of directors (TWOWOB). The same measure was used in the study of Ben-Amar et al. (2017).

The results of the alternative measure were in contrast to the main findings of CEDQty and CEDQ (column 7, Table 7-8 and 7-9). This is also inconsistent with the argument of Ben-Amar et al. (2017) that women can start influencing the reporting of CEDQty when it reaches a critical mass of two women directors. In their study, they provided support to critical mass theory by reporting the positive significant association between both two or three women on boards and carbon disclosure decision in Canada from 2008-2014 using a probit regression model. Despite this, the results of other variables in the alternative CEDQty model were similar to the CEDQty main finding, except for the significance level of CHAIRG. In the main finding, CHAIRG was significant at the 10% level, whereas in the alternative model it was significant at the 5% level. For CEDQ, only some variables (Y2006, Y2014, CHAIRG, SIZE, IND2 and IND3) in the alternative CEDQ model had consistent results with the CEDQ main finding. Finally, the R^2 of each the main

finding of CEDQty and CEDQ was slightly higher than the alternative model of CEDQty and CEDQ, respectively (0.4451 vs 0.4434; and 0.4546 vs 0.4532).

7.3.5.7 Measures of Institutional Ownership: GOVT and XGOVT to INST

Results of the main findings show that only XGOVT had a positive and significant effect on both CEDQty and CEDQ at the 5% significance level. Conversely, GOVT had no influence on both CEDQty and CEDQ. Since there were two different results related to institutional ownership, this thesis combines both groups of institutional ownership as one alternative measure, and labelled it as INST.

The results of the alternative measure reveal that the influence of INST on both CEDQty and CEDQ was positively significant at the 5% significance level (column 8, Table 7-8 and 7-9). Results of the other variables were similar to the main findings of both CEDQty and CEDQ models. Meanwhile, the R^2 of each the main finding of CEDQty and CEDQ was slightly higher than the alternative model of CEDQty and CEDQ, respectively (0.4451 vs 0.4442; and 0.4546 vs 0.4544).

7.3.5.8 Measures of a Muslim Chairperson and a CEO: CHAIR and CEO to CC

In the main findings, CHAIR and CEO measured the individual effect of a Muslim Chairperson and a Muslim CEO. The results appear to suggest that neither CHAIR nor CEO had influence on CEDQty and CEDQ. To validate this, CC was created as an alternative measure of CHAIR and CEO. CC measures the combined effect of having a Muslim Chairperson and a Muslim CEO.

The results of the alternative measure were consistent with the main findings that CC had no significant influence on both CEDQty and CEDQ (column 9, Table 7-8 and 7-9). Similarly, the results of other variables remain. Finally, the R^2 of each the main finding of CEDQty and CEDQ was slightly higher than the alternative model of CEDQty and CEDQ, respectively (0.4451 vs 0.4422; and 0.4546 vs 0.4516).

Table 7-8: Regression results of alternative measures on CEDQty

Model	1	2	3	4	5	6	7	8	9
	CEDQty Main	CEDQty SIZE2	CEDQty PRT2	CEDQty LEV2	CEDQty D_BS	CEDQty D_ID	CEDQty TWOVOB	CEDQty INST	CEDQty CC
(Intercept)	-1.635	2.346	-1.987	-0.885	-2.056	-1.775	0.147	-1.673	-1.756
Y2006	-3.304 ***	-3.276 ***	-3.302 ***	-3.284 ***	-3.308 ***	-3.295 ***	-3.339 ***	-3.305 ***	-3.305 ***
Y2014	0.716 **	0.973 ***	0.733 **	0.843 ***	0.711 **	0.702 **	0.809 **	0.727 **	0.721 **
SHA	0.687 *	0.676 *	0.695 *	0.812 *	0.708 *	0.680 *	0.770 *	0.703 *	0.685 *
CHAIR	-0.140	-0.100	-0.117	-0.194	-0.162	-0.150	-0.135	-0.143	
CEO	0.444	0.583	0.422	0.351	0.437	0.442	0.437	0.458	
CHAIRG	-2.477 *	-2.625 *	-2.431 *	-2.731 **	-2.472 *	-2.477 *	-3.081 **	-2.332 *	-2.445 *
CEOG	1.473	1.059	1.480	1.395	1.469	1.464	0.893	1.466	1.481
GOVT	3.403	3.804 *	3.415	4.011 *	3.573	3.391	4.234 *		3.516
XGOVT	4.439 **	4.092 **	4.379 **	4.982 **	4.445 **	4.444 **	4.266 **		4.582 **
BS	-0.107	-0.109	-0.111	-0.098		-0.103	-0.125	-0.109	-0.109
ID	-0.423	-0.836	-0.397	-0.238	-0.171		-0.520	-0.415	-0.468
WOB	5.386 **	4.912 **	5.299 **	5.475 ***	5.374 **	5.420 **		5.333 **	5.444 **
PRT	0.255	0.202		0.194	0.266	0.254	0.246	0.260	0.240
LEV	-3.096 *	-1.496	-2.938 *		-3.044 *	-3.123 *	-3.204 *	-3.103 *	-3.134 *
SIZE	0.994 ***		1.021 ***	0.891 ***	0.958 ***	0.997 ***	0.977 ***	0.985 ***	1.007 ***
IND2	-4.744 ***	-5.566 ***	-4.801 ***	-4.713 ***	-4.614 ***	-4.732 ***	-4.599 ***	-4.747 ***	-4.791 ***
IND3	-4.665 ***	-5.632 ***	-4.710 ***	-4.297 ***	-4.597 ***	-4.644 ***	-4.672 ***	-4.660 ***	-4.766 ***

Table 7-8: Regression results of alternative measures on CEDQty (continued)

Model	1	2	3	4	5	6	7	8	9
	CEDQty Main	CEDQty SIZE2	CEDQty PRT2	CEDQty LEV2	CEDQty D_BS	CEDQty D_ID	CEDQty TWOVOB	CEDQty INST	CEDQty CC
SIZE2		0.817 ***							
PRT2			1.067						
LEV2				0.011					
D_BS					-0.261				
D_ID						-0.122			
TWOVOB							0.718		
INST								4.140 **	
CC									0.282
QICC ^a	5492.99	5429.88	5479.34	5573.96	5516.92	5494.48	5541.62	5496.29	5512.72
R Squared ^b	0.4451	0.4517	0.4465	0.4373	0.4426	0.4449	0.4434	0.4442	0.4422

Significance level: * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$

1. Dependent variable is CEDQty.

2. ^(a) This QICC was obtained from the Generalized Estimating Equation (GEE) in SPSS.

3. ^(b) This R squared was not obtained from the GEE but rather from a panel data regression of STATA.

Table 7-9: Regression results of alternative measures on CEDQ

Model	1	2	3	4	5	6	7	8	9
	CEDQ Main	CEDQ SIZE2	CEDQ PRT2	CEDQ LEV2	CEDQ D_BS	CEDQ D_ID	CEDQ TWOVOW	CEDQ INST	CEDQ CC
(Intercept)	-1.037	7.076	-2.472	0.261	-2.072	-1.927	3.929	-1.132	-1.351
Y2006	-4.945 ***	-4.906 ***	-4.898 ***	-4.927 ***	-4.940 ***	-4.902 ***	-5.048 ***	-4.947 ***	-4.950 ***
Y2014	1.369 **	1.825 ***	1.350 **	1.525 **	1.383 **	1.300 **	1.627 ***	1.382 **	1.386 **
SHA	0.727	0.745	0.862	0.833	0.803	0.730	0.972	0.743	0.707
CHAIR	-0.625	-0.587	-0.564	-0.702	-0.690	-0.644	-0.619	-0.627	
CEO	0.813	1.087	0.672	0.738	0.739	0.777	0.843	0.838	
CHAIRG	-5.758 **	-5.927 **	-5.798 **	-6.067 **	-5.913 **	-5.786 **	-7.462 ***	-5.588 **	-5.723 **
CEOG	5.264	4.588	5.236	5.150	5.140	5.189	3.799	5.255	5.265
GOVT	7.346	8.389 *	6.791	8.325 *	7.403	7.658	9.627 *		7.452
XGOVT	8.551 **	7.723 *	8.629 **	9.178 **	8.815 **	8.646 **	7.974 *		9.103 **
BS	-0.206	-0.205	-0.218	-0.180		-0.183	-0.247	-0.207	-0.211
ID	-1.034	-1.719	-0.961	-0.620	-0.300		-1.158	-1.019	-1.120
WOB	15.408 ***	14.615 ***	15.186 ***	15.548 ***	15.259 ***	15.336 ***		15.336 ***	15.551 ***
PRT	0.795	0.715	-0.309	0.675	0.818	0.787	0.758	0.801	0.747
LEV	-5.440	-2.664	-5.033		-5.186	-5.206	-5.761 *	-5.444	-5.510
SIZE	1.814 ***		1.954 ***	1.640 ***	1.731 ***	1.817 ***	1.747 ***	1.806 ***	1.847 ***
IND2	-13.031 ***	-14.507 ***	-13.274 ***	-12.961 ***	-12.642 ***	-13.106 ***	-12.649 ***	-13.035 ***	-13.131 ***
IND3	-12.949 ***	-14.807 ***	-13.115 ***	-12.318 ***	-12.523 ***	-12.903 ***	-12.960 ***	-12.933 ***	-13.286 ***

Table 7-9: Regression results of alternative measures on CEDQ (continued)

Model	1	2	3	4	5	6	7	8	9
	CEDQ Main	CEDQ SIZE2	CEDQ PRT2	CEDQ LEV2	CEDQ D_BS	CEDQ D_ID	CEDQ TWOBOB	CEDQ INST	CEDQ CC
SIZE2		1.409 ***							
PRT2			-0.309						
LEV2				-0.780					
D_BS					0.181				
D_ID						0.312			
TWOBOB							1.919		
INST								8.197 **	
CC									0.047
QICC ^a	23586.56	23474.88	23595.25	23754.41	23666.48	23602.06	23836.07	23587.98	23653.48
R Squared ^b	0.4546	0.4583	0.4465	0.4516	0.4527	0.4544	0.4532	0.4544	0.4516

Significance level: * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$

1. Dependent variables is CEDQ.

2. ^(a) This QICC was obtained from the Generalized Estimating Equation (GEE) in SPSS.

3. ^(b) This R squared was not obtained from the GEE but rather from a panel data regression of STATA.

7.4 The Effects of Institutional Changes and Malaysian Company-specific Characteristics on CEDQty

7.4.1 Institutional Changes (H1.1c and H1.1d)

In the linear regressions, the results show that the institutional changes between 2006 and 2008 (Y2006) were positively related to CEDQty overall and all its dimensions (Y2006 having a negative coefficient meaning 2006 was lower than 2008). All of these were significant at the 1% level. In the binary logistic regressions, the results also reveal that these institutional changes had a positive impact (negative coefficient) on 19 CEDQty individual items at the 5% significance level. This implies that the institutional changes spanning from 2006 to 2008 had exerted substantial institutional pressures in influencing CEDQty overall, each dimension and the majority of CEDQty items by Malaysian companies. In other words, Malaysian companies had shown improved reporting overall, in each dimension, and in most CEDQty items in 2008, compared to the same reporting in 2006.

There were however, mixed results on the impact of institutional changes between 2008 and 2014 (Y2014) on CEDQty. Specifically, Y2014 was only significant positive at the 5% level in CEDQty overall, CEDQty D, CEDQty F, and seven individual models. Concurrently, Y2014 was negative and significant at the 1% level on CEDQty C, while significant at the 5% level on C1 item. These results suggested that institutional changes spanning between 2008 and 2014 had exerted further institutional pressures in influencing the perception of companies on CED. Even though there was a further increase in the reporting of CEDQty by Malaysian companies in 2014 compared to 2008, only for CEDQty overall, two of its dimensions, and seven individual items could this be attributed to the changes in institutional pressures as opposed to changes in company characteristics. Surprisingly, the reporting of one of each of the CEDQty dimensions and items in

2014 were found to be negatively impacted by the changes in institutional pressures between these periods.

Taken together, these results of linear and logistic regressions give high support to H1.1c that institutional changes between 2006 and 2008 have a positive influence on CEDQty. The results also provide high support to H1.1d that institutional changes between 2008 and 2014 influence CEDQty.

7.4.2 Islamic Influence (H2.1 – H4.1)

7.4.2.1 *Shari'ah*-compliant status (SHA)

In the linear regressions, the results illustrate that the *Shari'ah*-compliant status (SHA) had no influence on CEDQty overall and all its dimensions. However, in the binary logistic regressions, SHA had a significant positive influence on A1, A2 and B6 items at the 5% level. This implies that *Shari'ah*-compliant status has no influence on overall and dimensional CEDQty, but is stronger for reporting A1, A2 and B6 items only. These results give very limited support for H2.1 that the *Shari'ah*-compliant status has a positive influence on CEDQty.

7.4.2.2 Muslim Chairperson (CHAIR)

In the linear regressions, the findings reveal that a Muslim Chairperson (CHAIR) had no influence on CEDQty overall and all its dimensions. However, in the binary logistic regressions, CHAIR had a significant positive influence on the B10 and E4 items. These positive results imply that companies having a Muslim Chairperson are likely to provide more reporting of two specific CEDQty items, when compared to companies with non-Muslim Chairperson. These results provide limited support for H3.1 that a Muslim Chairperson has a positive influence on CEDQty.

7.4.2.3 Muslim CEO (CEO)

In the linear regressions, the results indicate that a Muslim CEO (CEO) had no influence on CEDQty overall and all its dimensions, except for a significant positive influence on CEDQty C. In the binary logistic regressions, there was the same positive effect on the four CEDQty items: C2, E2, F2 and F5. These positive results suggest that companies having a Muslim CEO will provide higher reporting of a specific CEDQty dimension and items, when compared to companies with non-Muslim CEO. These findings imply that when CEOs are practicing Islamic values according to the *Shari'ah*, there is a high chance on some items that they will acknowledge their accountability to the society and the environment by being more transparent through reporting of CEDQty. These give limited support for H4.1 that a Muslim CEO has a positive influence on CEDQty.

7.4.3 Corporate Governance (H5.1 – H11.1)

7.4.3.1 Chairperson gender (CHAIRG)

In the linear regressions, the findings reveal that the female Chairperson (CHAIRG) had no influence on CEDQty overall and all its dimensions when compared to the male Chairperson. The exception was for CEDQty E and CEDQty F, which had a significant positive influence (negative coefficient) on CEDQty at the 1% level. In the binary logistic regressions, CHAIRG also had the same positive statistically significant influence on five CEDQty items (E1, E2, E3, F2 and F4). These results suggest that companies with a female Chairperson are likely to have a higher reporting of CEDQty for specific dimensions and items than their counterparts with a male Chairperson. These results give limited support for H5.1 that the female Chairperson has a positive influence on CEDQty.

7.4.3.2 CEO gender (CEOG)

In the linear regressions, the results show that the female CEO (CEOG) had no influence on either CEDQty overall or all its dimensions, when compared to the male CEO. However, in the binary logistic regressions, CEOG had a significant positive influence (negative coefficient) on CEDQty C2 item. The positive influences indicate that the female CEO is likely to have a higher reporting of CEDQty C2 item when compared with the male CEO. These results give limited support for H6.1 that the female CEO has a positive influence on CEDQty.

7.4.3.3 Government institutional ownership (GOVT)

In the linear regressions, the findings demonstrate that the proportion of government institutional ownership (GOVT) had no influence on CEDQty overall and all its dimensions. The exception was for a statistical significant positive influence on CEDQty D at the 5% level. In the binary logistic regressions, this significant positive influence was discovered on five CEDQty items (B6, B7, B10, E2 and F4). These results give limited support for H7.1 that the proportion of government institutional ownership has a positive influence on CEDQty. Despite limited support, this suggests that companies with greater government institutional ownership are likely to increase their reporting of specific CEDQty dimensions and items.

7.4.3.4 Non-government institutional ownership (XGOVT)

In the linear regressions, the results reveal that the proportion of non-government institutional ownership (XGOVT) had a significant positive influence on CEDQty overall, CEDQty D and CEDQty F. Similarly, in the binary logistic regressions, XGOVT had the same significant positive influence on seven CEDQty items (A1, B6, B11, D1, D2, E4 and F4). This implies that companies with a greater proportion of non-government institutional ownership are likely to provide higher reporting of overall CEDQty, specific CEDQty dimensions and items. These results provide

high support to H8.1 that the proportion non-government institutional ownership influences CEDQty.

7.4.3.5 Board size (BS)

In the linear regressions, the findings show that board size (BS) had no influence on CEDQty overall and all its dimensions, except for a significant positive influence on CEDQty F. Conversely, in the binary logistic regressions, BS had a significant negative influence on two CEDQty items (B8 and E4). This indicates that although companies with larger boards are likely to increase reporting of a specific CEDQty dimension, at the same time they are likely to decrease reporting of specific CEDQty items. These findings provide limited support for H9.1 that board size influences CEDQty.

7.4.3.6 Independent board members (ID)

In the linear regressions, the results provide evidence that the proportion of independent board members (ID) had no influence on CEDQty overall. However, ID had a negative significant influence on CEDQty E. The results of the binary logistic regressions show that there was a significant positive influence on the A2 item, and concurrently a significant negative influence on the E3 item. These mixed results imply that companies with a high proportion of independent directors tend to report lesser CEDQty for a specific dimension and item, however, may also tend to increase reporting of a specific CEDQty item. These results provide limited support for H10.1 that the proportion of independent directors influences CEDQty.

7.4.3.7 Women on boards (WOB)

In the linear regressions, the results indicate that the proportion of women on boards of directors (WOB) had a significant positive influence on CEDQty overall, CEDQty C, CEDQty E and CEDQty F at the 5% level. Likewise, in the binary logistic regressions, WOB had a significant positive influence on two CEDQty items (A5 and E3). This signifies that the higher proportion of women on boards contribute to higher CEDQty overall, specific dimensions and items. These results

highly support H11.1 that the proportion of women on boards of directors influences CEDQty.

7.4.4 Financial Performance (H12.1 – H13.1)

7.4.4.1 Profitability (PRT)

In the linear and binary logistic regressions, the findings show that profitability (PRT) had no influence on CEDQty overall, all its dimensions and all CEDQty items. These results, therefore, reject H12.1 that profitability influences CEDQty.

7.4.4.2 Leverage (LEV)

In the linear and binary logistic regressions, the results demonstrate that leverage (LEV) had no influence on CEDQty overall, all its dimensions and all CEDQty items. These results reject H13.1 that leverage influences CEDQty.

7.4.5 Control Variables

7.4.5.1 Company size (SIZE)

In the linear and binary logistic regressions, the results show that the control variable of company size (SIZE) had a significant positive influence on CEDQty overall, all its dimensions and 15 CEDQty items at the 5% level. This positive association is consistent with the prediction that larger companies are likely to increase their CEDQty, as argued in Prado-Lorenzo, Rodríguez-Domínguez, et al. (2009).

7.4.5.2 Industry sector (IND)

In the linear regressions, the findings indicate that industry sectors had a different influence on CEDQty overall and all its dimensions. Specifically, the energy industry (IND2) was negatively significant on CEDQty overall, CEDQty B,

CEDQty C and CEDQty F. The materials industry (IND3) was negatively significant on CEDQty overall and all its dimensions, except for CEDQty A. In the binary logistic regressions, IND2 and IND3 had a statistical negative influence on 11 and 12 CEDQty items, respectively. These results signify that companies in the energy and materials sectors are likely to provide lesser reporting of CEDQty overall, dimensions and individual items when compared to the utilities industry (IND1). In other words, among the ESI in the sample companies, companies in the utilities industry led the reporting of CEDQty for the period under examination, followed by the energy and materials industries. However, there was no statistical difference of CEDQty by the energy and materials industries. These findings, however, were in contrast with the result of Rao et al. (2012) who found that the materials industry had a higher CEDQty than the utilities industry, and companies in the energy industry had no influence on CEDQty.

7.5 The Effects of Institutional Changes and Malaysian Company-specific Characteristics on CEDQ

7.5.1 Institutional Changes (H1.2c and H1.2d)

In the linear regressions, the results show that the institutional changes between 2006 and 2008 (Y2006) were positively related (negative coefficient) to CEDQ overall and all its dimensions. All of these were significant at the 1% level. In the ordinal logistic regressions, Y2006 also had a negative relationship with 17 CEDQ individual items at the 5% significance level. This infers that institutional changes between 2006 and 2008 had exerted substantial institutional pressures in increasing not only the broad CEDQ, but also improved the reporting of the majority CEDQ individual items in 2008 when compared to 2006.

However, the institutional changes between 2008 and 2014 (Y2014) had mixed effects on CEDQ. Y2014 was positively significant with CEDQ overall, CEDQ B, CEDQ F and six CEDQ items (A3, B4, B10, F2, F4 and F5) at the 5% level. These

results were consistent with CEDQ_{ty}, except for CEDQ B and a number of CEDQ items. Similar to CEDQ_{ty} also, Y2014 was negative and significant at the 1% level on CEDQ C, while significant at the 5% level on C1 item. All these results indicate that subsequent institutional changes between 2008 and 2014 had promoted further increase in CEDQ overall, two dimensions and six CEDQ items by Malaysian companies in 2014 when compared to 2008. Despite this, these institutional changes had a contradictory effect on one of each of the CEDQ dimensions and items between 2008 and 2014.

These overall results of linear and logistic regressions give high support to H1.2c that institutional changes between 2006 and 2008 have a positive influence on CEDQ. The results also provide high support to H1.2d that institutional changes between 2008 and 2014 influence CEDQ.

7.5.2 Islamic Influence (H2.2 – H4.2)

7.5.2.1 *Shari'ah*-compliant status (SHA)

In the linear and ordinal logistic regressions, the results indicate that the *Shari'ah*-compliant status (SHA) had no influence on CEDQ overall, all its dimensions, and CEDQ items. These results thus reject H2.1 that the *Shari'ah*-compliant status has a positive influence on CEDQ.

7.5.2.2 Muslim Chairperson (CHAIR)

In the linear regressions, the results present that a Muslim Chairperson (CHAIR) had no influence on CEDQ overall and all its dimensions. However, in the ordinal logistic regressions, CHAIR was positively significant on three CEDQ items (A2, B8 and E4). This positive effect implies that companies having a Muslim Chairperson are likely to increase the propensity to report some CEDQ items, when compared to companies with non-Muslim Chairperson. These results provide very

limited support for H3.2 that a Muslim Chairperson has a positive influence on CEDQ.

7.5.2.3 Muslim CEO (CEO)

In the linear regressions, the results show that a Muslim CEO (CEO) had no influence on CEDQ overall and all its dimensions, except for a significant and positive influence on CEDQ C. Likewise, there was the same positive effect of CEO on five CEDQ items (A1, B8, C1, C2 and F2) in the ordinal logistic regressions. These positive results infer companies having a Muslim CEO are likely to provide a higher reporting of specific CEDQ dimensions and items, when compared to companies with non-Muslim CEO. These findings give limited support for H4.2 that a Muslim CEO has a positive influence on CEDQ.

7.5.3 Corporate Governance (H5.2 – H11.2)

7.5.3.1 Chairperson gender (CHAIRG)

In the linear regressions, the results show that the female Chairperson (CHAIRG) had a significant positive influence (negative coefficient) on CEDQ overall, CEDQ A, CEDQ E and CEDQ F at the 5% level. Likewise, in the ordinal logistic regressions, CHAIRG had a significant positive influence on seven CEDQ items (A3, B1, E1, E2, E3, F2 and F4). These results indicate that companies led by a female Chairperson are likely to have a higher CEDQ for specific items than companies led by a male Chairperson. These provide high support to H5.2 that the female Chairperson has a positive influence on CEDQ.

7.5.3.2 CEO gender (CEOG)

In the linear regressions, the results reveal that the female CEO (CEOG) had no influence on CEDQ overall and all its dimensions. However, the results of the ordinal logistic regressions show that CEOG had a significant positive relationship with two CEDQ items (B2 and C2). These results signify that the female CEO is

likely to have higher reporting of two specific CEDQ items, when compared to the male CEO. These results give limited support to H6.2 that the female CEO has a positive influence on CEDQ.

7.5.3.3 Government institutional ownership (GOVT)

In the linear and ordinal logistic regressions, the proportion of government institutional ownership (GOVT) had no influence on CEDQ overall. However, GOVT had a significant positive influence on CEDQ E and six CEDQ items (B1, B7, B10, E2, F4 and F5) at the 5% level. These results imply that companies with a greater government institutional ownership are likely to increase specific CEDQ dimensions and individual items. These results provide limited support for H7.2 that the proportion of government institutional ownership has a positive influence on CEDQ.

7.5.3.4 Non-government institutional ownership (XGOVT)

In the linear regressions, the proportion of non-government institutional ownership (XGOVT) had a significant positive influence on CEDQ overall and all its dimensions, except for CEDQ B and CEDQ C. Similarly, in the ordinal logistic regressions, XGOVT had a significant and positive influence on nine CEDQ items and concurrently a negative influence on two CEDQ items. These results indicate that companies with a greater proportion of non-government institutional ownership are likely to provide higher overall CEDQ, specific CEDQ dimensions and items. All these results provide high support to H8.2 that the proportion of non-government institutional ownership influences CEDQ.

7.5.3.5 Board size (BS)

In the linear regressions, board size (BS) had no influence on CEDQ overall. However, BS had significant and mixed influence on CEDQ dimensions. Specifically, BS was positively related to CEDQ F, while negatively related to CEDQ E. Nonetheless, this contrasting effect did not appear in CEDQ items because BS had a significant negative influence on four CEDQ items (B8, C1, E2

and E4) in the ordinal logistic regressions. This implies that companies with larger boards tend to increase the reporting of a specific dimension and simultaneously tend to decrease the reporting of other specific dimensions and items. Based on these results, therefore, there was limited support for H9.2 that board size influences CEDQ.

7.5.3.6 Board independence (ID)

In the linear regressions, the proportion of independent board members (ID) had no influence on CEDQ overall and all its dimensions. In contrast, in the ordinal logistic regressions, ID had a significant positive influence on A2 item, and concurrently a significant negative influence on B8 and C2 items. These results thus provide very limited support for H10.2 that the proportion of independent directors influences CEDQ.

7.5.3.7 Women on boards (WOB)

In the linear regressions, the proportion of women on boards of directors (WOB) had a significant positive influence on CEDQ overall and all its dimensions at the 5% level, with the exception of CEDQ D. The same significant positive results of WOB on six CEDQ items (B1, C1, C2, D2, E2 and E3) were also found in the ordinal logistic regressions. These results infer that companies with a higher proportion of women on boards are likely to increase their specific CEDQ dimension and items. These give high support to H11.2a that the proportion of women on boards of directors influences CEDQ.

7.5.4 Financial Performance (H12.2 – H13.2)

7.5.4.1 Profitability (PRT)

In the linear and ordinal logistic regressions, profitability (PRT) had no influence on CEDQ overall. However, PRT had a significant positive influence on CEDQ E and E3 item. This indicates that companies with higher profitability are likely to

increase their reporting of a specific CEDQ dimension and item. These results provide limited support for H12.2 that profitability influences CEDQ.

7.5.4.2 Leverage (LEV)

In the linear and ordinal logistic regressions, leverage (LEV) had no influence on CEDQ overall. However, LEV had a significant negative influence on CEDQ E and three CEDQ items (A4, B3 and E4). These results indicate that lower leverage of companies is likely to provide higher reporting of specific CEDQ dimensions and individual items. Therefore, these findings provide limited support for H13.2 that leverage influences CEDQ.

7.5.5 Control Variables

7.5.5.1 Company size (SIZE)

In the linear and ordinal logistic regressions, company size (SIZE) has a significant positive influence on CEDQ overall, all its dimensions with exception of CEDQ C, and 17 CEDQ items at the 5% level. This positive relationship is consistent with the argument that larger companies tend to increase their CEDQ because of their visibility, as in Cormier et al. (2005).

7.5.5.2 Industry sector (IND)

In the linear regressions, the energy industry (IND2) and the materials industry (IND3) had a significant negative influence on CEDQ overall and all CEDQ dimensions compared to the utilities industry, with the exception of CEDQ A. Likewise, in the ordinal logistic regressions, IND2 and IND3 had significant negative influence on 14 different sets of CEDQ items. In addition, IND2 also had a positive influence on one CEDQ item. These results imply that companies in the energy and materials industry are likely to have lesser CEDQ overall, specific dimensions and individual items when compared to the utilities industry (IND1). Similar to CEDQty, these findings validate that companies in the utilities industry

were the leader in CEDQ practices among the sample ESI companies for the period under examination, followed by the energy and materials industries. Again, there was no statistical difference of CEDQ by the energy and materials industries.

7.6 Consolidated Key Findings

Utilising GEE forms of multivariate and logistic regression models based on panel data analysis, this thesis examines the effects of 14 independent variables and two control variables on each CEDQty and CEDQ. The conclusion of acceptance or rejection of hypotheses is summarised in Table 7-10 for CEDQty and Table 7-11 for CEDQ. Meanwhile, Table 7-12 provides detailed key statistical findings for items of CEDQty and CEDQ and Table 7-13 summarises 37 models each for CEDQty and CEDQ based on the accepted hypotheses.

From the conclusion of hypotheses for CEDQty in Table 7-10, findings of this thesis provide high support to the influence of: institutional changes between 2006 and 2008, institutional changes between 2008 and 2014, non-government institutional ownership, and women on boards on CEDQty. A limited support was found for the influence of: *Shari'ah*-compliant status, Muslim Chairperson, Muslim CEO, female Chairperson, female CEO, government institutional ownership, board size and board independence on CEDQty. Meanwhile, findings reject the influence of profitability and leverage on CEDQty.

Based on the CEDQty overall model, the R squared is 44.51% (Table 7-4), indicating that the same percentage of changes in this overall reporting is explained by the changes in the institutional pressures and company-specific characteristics. Further, the R squared of six CEDQty dimension models are in between 43.73% to 45.17%. Although these values of R squared are considered as describing a moderate goodness of fit, they are higher than the reported R squared of Ghazali (2007) as 27%, Haji (2013b) as 21% and Sundarasan et al. (2016) as 34% in the context of CEDQty or CSDQty in Malaysia.

The result of CEDQty provides strong support to institutional theory that institutional pressures (represented by institutional changes) influence CEDQty practices by companies. Because each company has its own company-specific characteristics (represented by Islamic influence, corporate governance, financial performance and control variables) and a member of these respective organisational fields, the ongoing interaction with each other members in that field has shaped the way each company perceives and interprets institutional pressures of CED. Eventually, this is translated into CEDQty. Thus, the variation of CEDQty among companies is resulting from their respond to institutional pressures and the influence of company-specific characteristics examined in this thesis.

For the conclusion of CEDQ findings in Table 7-11, findings provide high support to the influence of: institutional changes between 2006 and 2008, institutional changes between 2008 and 2014, female Chairperson, non-government institutional ownership, and women on boards on CEDQ. A limited support was found for the influence of: Muslim Chairperson, Muslim CEO, female CEO, government institutional ownership, board size, board independence, profitability and leverage on CEDQ. Meanwhile, findings reject the influence *Shari'ah*-compliant status on CEDQ.

The R squared result of the CEDQ overall model of 45.46% proves that about 45% of changes in CEDQ overall is explained by the changes in institutional pressures and company-specific characteristics (Table 7-5). Further, the R squared of six CEDQ dimension models are in the range of 30.48% to 38.78%. These results are higher than the reported R squared by Sulaiman et al. (2014) of 27% who examined CEDQ, but lower than reported by Haji and Ghazali (2013a) of 50% who studied voluntary disclosure quality.

The results of CEDQ provide support to institutional theory that institutional pressures (represented by institutional changes) and company-specific characteristics influence CEDQ practices by companies. Each company has its own company-specific characteristics. Organisational fields form by these

characteristics interacts with each other both formally and informally. This interaction shapes the perception of companies about institutional pressures on CEDQ. Accordingly, they interpreted this in the form of responses to CEDQ. The variation in CEDQ among companies is influenced by their respond to institutional pressures and how company-specific characteristics modify the effect of institutional pressures on the reporting behaviour.

Table 7-10: Summary of key statistical findings for CEDQty

Hypotheses for CEDQty		Findings (Table 6-4, 7-4 and 7-6)			Robustness Tests (Table 7-8)	Conclusion of acceptance or rejection of hypothesis
		Overall	Dimension	Item	Overall	
H1.1a	There is a significant difference in CEDQty in 2006 and 2008.	(+) S	(+) S all	na	na	High support
H1.1b	There is a significant difference in CEDQty in 2008 and 2014.	NS	(+) S (F)	na	na	Limited support
H1.1c	Institutional changes between 2006 and 2008 have a positive influence on CEDQty.	(+)* S	(+)* S (all)	(+)* S (19 items)	na	High support
H1.1d	Institutional changes between 2008 and 2014 influence CEDQty.	(+) S	(+ / -) S (D and F / C)	(+ / -) S (7 / 1 items)	na	High support
H2.1	<i>Shari'ah</i> -compliant status has a positive influence on CEDQty.	NS	NS	(+) S (3 items)	na	Limited support
H3.1	Muslim Chairperson has a positive influence on CEDQty.	NS	NS	(+) S (2 items)	NS	Limited support
H4.1	Muslim CEO has a positive influence on CEDQty.	NS	(+) S (C)	(+) S (4 items)		Limited support
H5.1	Female Chairperson has a positive influence on CEDQty.	NS	(+)* S (E and F)	(+)* S (5 items)	na	Limited support
H6.1	Female CEO has a positive influence on CEDQty.	NS	NS	(+)* S (1 item)	na	Limited support
H7.1	The proportion of government institutional ownership has a positive influence on CEDQty.	NS	(+) S (D)	(+) S (5 items)	(+) S	Limited support
H8.1	The proportion of non-government institutional ownership influences CEDQty.	(+) S	(+) S (D and F)	(+) S (7 items)		High support

Table 7-10: Summary of key statistical findings for CEDQty (continued)

Hypotheses for CEDQty		Findings (Table 6-4, 7-4 and 7-6)			Robustness Tests (Table 7-8)	Conclusion of acceptance or rejection of hypothesis
		Overall	Dimension	Item	Overall	
H9.1	Board size influences CEDQty.	NS	(+) S (F)	(-) S (2 items)	NS	Limited support
H10.1	The proportion of independent directors influences CEDQty.	NS	(-) S (E)	(+ / -) S (1 / 1 item)	NS	Limited support
H11.1	The proportion of women on boards of directors influences CEDQty.	(+) S	(+) S (C, E and F)	(+) S (2 items)	NS	High support
H12.1	Profitability influences CEDQty.	NS	NS	NS	NS	Reject
H13.1	Leverage influences CEDQty.	NS	NS	NS	NS	Reject

Notes:

1. S = Supported; NS = Not supported; na = not applicable

2. Acceptance or rejection of hypotheses are based on the statistical significance level of 5% for a two-tailed hypothesis and a one-tailed hypothesis.

3. High support indicates that a variable is statistically significant either in the overall CEDQty, or at least five dimensions of CEDQty, or at least 21 CEDQty items.

4. Moderate support indicates that a variable is statistically significant either in at least three dimensions of CEDQty, or at least 11 CEDQty items.

5. Limited support indicates that a variable is statistically significant either in less than three dimensions of CEDQty, or less than 11 CEDQty items.

* In order to support H1.1c, the positive association is supported by a negative coefficient in the statistical analysis because it measures differences in institutional pressures from 2008 (base year) to 2006, rather than differences in institutional pressures from 2006 to 2008. Similarly, in order to support H5.1 and H6.1, the positive association is supported by a negative coefficient in the statistical analysis because 0 represents female while 1 represents male.

Table 7-11: Summary of key statistical findings for CEDQ

Hypotheses for CEDQ		Findings (Table 6-4, Table 7-5 and 7-7)			Robustness Tests (Table 7-9)	Conclusion of acceptance or rejection of hypothesis
		Overall	Dimension	Item	Overall	
H1.2a	There is a significant difference in CEDQ in 2006 and 2008.	(+) S	(+) S (A, B, D)	na	na	Moderate support
H1.2b	There is a significant difference in CEDQ in 2008 and 2014.	NS	NS	na	na	Reject
H1.2c	Institutional changes between 2006 and 2008 have a positive influence on CEDQ.	(+)* S	(+)* S (all)	(+)* S (17 items)	na	High support
H1.2d	Institutional changes between 2008 and 2014 influence CEDQ.	(+) S	(+ / -) S (B and F / C)	(+ / -) S (6 items / 1 item)	na	High support
H2.2	<i>Shari'ah</i> -compliant status has a positive influence on CEDQ.	NS	NS	NS	na	Reject
H3.2	Muslim Chairperson has a positive influence on CEDQ.	NS	NS	(+) S (3 items)	NS	Limited support
H4.2	Muslim CEO has a positive influence on CEDQ.	NS	(+) S (C)	(+) S (5 items)		Limited support
H5.2	Female Chairperson has a positive influence on CEDQ.	(+)* S	(+)* S (A, E, F)	(+)* S (7 items)	na	High support
H6.2	Female CEO has a positive influence on CEDQ.	NS	NS	(+)* S (2 items)	na	Limited support
H7.2	The proportion of government institutional ownership has a positive influence on CEDQ.	NS	(+) S (E)	(+) S (6 items)	(+) S	Limited support
H8.2	The proportion of non-government institutional ownership influences CEDQ.	(+) S	(+) S (A, D, E, F)	(+ / -) S (9 / 2 items)		High support

Table 7-11: Summary of key statistical findings for CEDQ (continued)

Hypotheses for CEDQ		Findings (Table 6-4, Table 7-5 and 7-7)			Robustness Tests (Table 7-9)	Conclusion of acceptance or rejection of hypothesis
		Overall	Dimension	Item	Overall	
H9.2	Board size influences CEDQ.	NS	(+ / -) S (F / E)	(-) S (4 items)	NS	Limited support
H10.2	The proportion of independent directors influences CEDQ.	NS	NS	(+ / -) S (1 / 2 items)	NS	Limited support
H11.2	The proportion of women on boards of directors influences CEDQ.	(+) S	(+) S (A, B, C, E, F)	(+) S (6 items)	NS	High support
H12.2	Profitability influences CEDQ.	NS	(+) S (E)	(+) S (1 item)	NS	Limited support
H13.2	Leverage influences CEDQ.	NS	(-) S (E)	(-) S (3 items)	NS	Limited support

Notes:

1. S = Supported; NS = Not supported; na = not applicable
2. Acceptance or rejection of hypotheses are based on the statistical significance level of 5% for a two-tailed hypothesis and a one-tailed hypothesis.
3. High support indicates that a variable is statistically significant either in the overall CEDQ, or at least five dimensions of CEDQ, or at least 21 CEDQ items.
4. Moderate support indicates that a variable is statistically significant either in at least three dimensions of CEDQ, or at least 11 CEDQ items.
5. Limited support indicates that a variable is statistically significant either in less than three dimensions of CEDQ, or less than 11 CEDQ items.

* In order to support H1.2c, the positive association is supported by a negative coefficient in the statistical analysis because it measures differences in institutional pressures from 2008 (base year) to 2006, rather than differences in institutional pressures from 2006 to 2008. Similarly, in order to support H5.2 and H6.2, the positive association is supported by a negative coefficient in the statistical analysis because 0 represents female while 1 represents male.

Table 7-12: Detailed of key statistical findings for items of CEDQty and CEDQ

Hypotheses for CEDQty and CEDQ		Findings on item of CEDQty	Findings on item of CEDQ
H1.1c or H1.2c	Institutional changes between 2006 and 2008 have a positive influence on each CEDQty and CEDQ.	(+) S for 19 items: A1, A2, A5, B1, B2, B3, B4, B5, B10, B11, C1, C2, D1, E1, E2, E3, E4, F2, F3	(+) S for 17 items: A1, A2, B1, B2, B3, B4, B8, B10, B11, C1, C2, D1, E1, E3, E4, F2, F3
H1.1d or H1.2d	Institutional changes between 2008 and 2014 influence each CEDQty and CEDQ.	(+) S for 7 items: A3, B4, B10, D2, F2, F4, F5 (-) S for 1 item: C1	(+) S for 6 items: A3, B4, B10, F2, F4, F5 (-) S for 1 item: C1
H2.1 or H2.2	<i>Shari'ah</i> -compliant status has a positive influence on each CEDQty and CEDQ.	(+) S for 3 items: A1, A2, B6	NS
H3.1 or H3.2	Muslim Chairperson has a positive influence on each CEDQty and CEDQ.	(+) S for 2 items: B10, E4	(+) S for 3 items: A2, B8, E4
H4.1 or H4.2	Muslim CEO has a positive influence on each CEDQty and CEDQ.	(+) S for 4 items: C2, E2, F2, F5	(+) S for 5 items: A1, B8, C1, C2, F2
H5.1 or H5.2	Female Chairperson has a positive influence on each CEDQty and CEDQ.	(+) S for 5 items: E1, E2, E3, F2, F4	(+) S for 7 items: A3, B1, E1, E2, E3, F2, F4
H6.1 or H6.2	Female CEO has a positive influence on each CEDQty and CEDQ.	(+) S for 1 item: C2	(+) for 2 items: B2, C2
H7.1 or H7.2	The proportion of government institutional ownership has a positive influence on each CEDQty and CEDQ.	(+) S for 5 items: B6, B7, B10, E2, F4	(+) S for 6 items: B1, B7, B10, E2, F4, F5
H8.1 or H8.2	The proportion of non-government institutional ownership influences each CEDQty and CEDQ.	(+) S for 7 items: A1, B6, B11, D1, D2, E4, F4	(+) S for 9 items: A1, A2, B6, B7, D1, D2, E3, E4, F4 (-) S for 2 items: A4, A5

Table 7-12: Detailed of key statistical findings for items of CEDQty and CEDQ (continued)

Hypotheses for CEDQty and CEDQ		Findings on item of CEDQty	Findings on item of CEDQ
H9.1 or H9.2	Board size influences each CEDQty and CEDQ.	(-) S for 2 items: B8, E4	(-) S for 4 items: B8, C1, E2, E4
H10.1 or H10.2	The proportion of independent directors influences each CEDQty and CEDQ.	(+) S for 1 item: A2 (-) S for 1 item: E3	(+) S for 1 item: A2 (-) S for 2 items: B8, C2
H11.1 or H11.2	The proportion of women on boards of directors influences each CEDQty and CEDQ.	(+) S for 2 items: A5, E3	(+) S for 6 items: B1, C1, C2, D2, E2, E3
H12.1 or H12.2	Profitability influences each CEDQty and CEDQ.	NS	(+) S for 1 item: E3
H13.1 or H13.2	Leverage influences each CEDQty and CEDQ.	NS	(-) S for 3 items: A4, B3, E4

Table 7-13: Summary of CED model

DV (CEDQty or CEDQ)	Explanatory variables for CEDQty	Explanatory variables for CEDQ
Overall CED	(+)Y2006, (+)Y2014, (+)XGOVT, (+)WOB, (+)SIZE, (-)IND2, (-)IND3	(+)Y2006, (+)Y2014, (+)CHAIRG, (+)XGOVT, (+)WOB, (+)SIZE, (-)IND2, (-)IND3
CED A	(+)Y2006, (+)SIZE	(+)Y2006, (+)CHAIRG, (+)XGOVT, (+)WOB, (+)SIZE
CED A1	(+)Y2006, (+)SHA, (+)XGOVT, (+)SIZE	(+)Y2006, (+)CEO, (+)XGOVT, (+)SIZE
CED A2	(+)Y2006, (+)SHA, (+)ID	(+)Y2006, (+)CHAIR, (+)XGOVT, (+)ID
CED A3	(+)Y2014	(+)Y2014, (+)CHAIRG, (+)SIZE, (-)IND3
CED A4	(-)IND2, (-)IND3	(-)XGOVT, (-)LEV, (-)IND2, (-)IND3
CED A5	(+)Y2006, (+)WOB, (+)SIZE	(-)XGOVT, (-)IND2
CED B	(+)Y2006, (+)SIZE, (-)IND2, (-)IND3	(+)Y2006, (+)Y2014, (+)WOB, (+)SIZE, (-)IND2, (-)IND3
CED B1	(+)Y2006, (+)SIZE	(+)Y2006, (+)CHAIRG, (+)GOVT, (+)WOB, (+)SIZE
CED B2	(+)Y2006, (+)SIZE	(+)Y2006, (+)CEOG, (+)SIZE
CED B3	(+)Y2006, (-)IND2, (-)IND3	(+)Y2006, (-)LEV, (+)SIZE, (-)IND2, (-)IND3
CED B4	(+)Y2006, (+)Y2014, (+)SIZE, (-)IND2, (-)IND3	(+)Y2006, (+)Y2014, (+)SIZE, (-)IND2, (-)IND3
CED B5	(+)Y2006, (+)SIZE, (-)IND2	(+)IND2
CED B6	(+)SHA, (+)GOVT, (+)XGOVT, (+)SIZE, (-)IND2	(+)XGOVT, (+)SIZE
CED B7	(+)GOVT, (+)SIZE, (-)IND2, (-)IND3	(+)GOVT, (+)XGOVT, (+)SIZE, (-)IND2, (-)IND3
CED B8	(-)BS	(+)Y2006, (+)CHAIR, (+)CEO, (-)BS, (-)ID
CED B9	-	-
CED B10	(+)Y2006, (+)Y2014, (+)CHAIR, (+)GOVT	(+)Y2006, (+)Y2014, (+)GOVT
CED B11	(+)Y2006, (+)XGOVT, (-)IND2	(+)Y2006, (-)IND2, (-)IND3

Table 7-13: Summary of CED model (continued)

DV (CEDQty or CEDQ)	Explanatory variables for CEDQty	Explanatory variables for CEDQ
CED C	(+)Y2006, (-)Y2014, (+)CEO, (+)WOB, (+)SIZE, (-)IND2, (-)IND3	(+)Y2006, (-)Y2014, (+)CEO, (+)WOB, (-)IND2, (-)IND3
CED C1	(+)Y2006, (-)Y2014, (+)SIZE, (-)IND2, (-)IND3	(+)Y2006, (-)Y2014, (+)CEO, (-)BS, (+)WOB, (+)SIZE, (-)IND2, (-)IND3
CED C2	(+)Y2006, (+)CEO, (+)CEOG, (-)IND2, (-)IND3	(+)Y2006, (+)CEO, (+)CEOG, (-)ID, (+)WOB, (-)IND2, (-)IND3
CED C3	(-)IND2, (-)IND3	(-)IND2, (-)IND3
CED D	(+)Y2006, (+)Y2014, (+)GOVT, (+)XGOVT, (+)SIZE, (-)IND3	(+)Y2006, (+)XGOVT, (+)SIZE, (-)IND2, (-)IND3
CED D1	(+)Y2006, (+)XGOVT, (+)SIZE	(+)Y2006, (+)XGOVT, (+)SIZE
CED D2	(+)Y2014, (+)XGOVT, (+)SIZE, (-)IND3	(+)XGOVT, (+)WOB, (+)SIZE, (-)IND2, (-)IND3
CED E	(+)Y2006, (+)CHAIRG, (-)ID, (+)WOB, (+)SIZE, (-)IND3	(+)Y2006, (+)CHAIRG, (+)GOVT, (+)XGOVT, (-)BS, (+)WOB, (+)PRT, (-)LEV, (+)SIZE, (-)IND2, (-)IND3
CED E1	(+)Y2006, (+)CHAIRG	(+)Y2006, (+)CHAIRG, (-)IND2, (-)IND3
CED E2	(+)Y2006, (+)CEO, (+)CHAIRG, (+)GOVT, (+)SIZE, (-)IND3	(+)CHAIRG, (+)GOVT, (-)BS, (+)WOB, (+)SIZE, (-)IND2, (-)IND3
CED E3	(+)Y2006, (+)CHAIRG, (-)ID, (+)WOB, (+)SIZE, (-)IND3	(+)Y2006, (+)CHAIRG, (+)XGOVT, (+)WOB, (+)PRT, (+)SIZE, (-)IND2, (-)IND3
CED E4	(+)Y2006, (+)CHAIR, (+)XGOVT, (-)BS, (-)IND3	(+)Y2006, (+)CHAIR, (+)XGOVT, (-)BS, (-)LEV, (+)SIZE
CED F	(+)Y2006, (+)Y2014, (+)CHAIRG, (+)XGOVT, (+)BS, (+)WOB, (+)SIZE, (-)IND2, (-)IND3	(+)Y2006, (+)Y2014, (+)CHAIRG, (+)XGOVT, (+)BS, (+)WOB, (+)SIZE, (-)IND2, (-)IND3
CED F1	-	-
CED F2	(+)Y2006, (+)Y2014, (+)CEO, (+)CHAIRG	(+)Y2006, (+)Y2014, (+)CEO, (+)CHAIRG, (+)SIZE
CED F3	(+)Y2006	(+)Y2006
CED F4	(+)Y2014, (+)CHAIRG, (+)GOVT, (+)XGOVT, (+)SIZE, (-)IND2	(+)Y2014, (+)CHAIRG, (+)GOVT, (+)XGOVT, (+)SIZE, (-)IND2, (-)IND3
CED F5	(+)Y2014, (+)CEO, (+)SIZE, (-)IND3	(+)Y2014, (+)GOVT, (+)SIZE

7.7 Summary

The first part of this chapter presents the inferential statistics of the independent variables used in this thesis. The descriptive and univariate analyses demonstrate that the sample Malaysian listed companies show some compliance of good governance practices as prescribed in the *Malaysian Code of Corporate Governance*. By employing three types of regressions, the results of multivariate analysis provide empirical evidence of the model developed in Chapter 4 in the Malaysian context. All the results point to the importance of the time factor (representing institutional changes) between 2006 and 2014 in explaining the variation in CEDQty and CEDQ practices by Malaysian companies. Consistent with the institutional theory, institutional pressures between these periods had evolved.

Specifically, the positive statistically significant relationships of institutional changes between 2006 and 2008 with both CEDQty and CEDQ overall, each of their dimensions and the majority of CEDQty and CEDQ individual items, were consistent with less institutional pressures on the institutions during 2006 and prior years, when compared to 2008. The significant positive influence of institutional changes between 2008 and 2014 on both CEDQty and CEDQ overall, specific dimensions and individual items of CEDQty and CEDQ confirmed that institutions had evolved and exerted further pressures on companies to increase their reporting in 2014, when compared to 2008. However, when comparing the institutional changes between 2006 and 2008 with those between 2008 and 2014, the results suggest that the influence of the first period were more significant than the second period from the number of significant dimensions and items.

In addition to institutional changes, the results surmise that company-specific characteristics had different effects on both CEDQty and CEDQ. Interestingly, the likelihood that companies will provide CEDQty is higher when a greater proportion of the shares in companies are owned by the non-government institutional

ownership and a higher proportion of women on boards. Meanwhile, the likelihood that companies will provide CEDQ is higher when companies have the combination of a female Chairperson, have a greater proportion of non-government institutional ownership and a greater proportion of women on boards. Surprisingly, the Islamic influence through the *Shari'ah*-compliant status, and each of a Muslim Chairperson and a Muslim CEO have limited influence on CEDQty and CEDQ. The exception was for *Shari'ah*-compliant status that had no influence on CEDQ. While the rest of the other variables were significant at dimensional and individual item levels, notably, profitability and leverage, however, were not related to CEDQty only. Further interpretation of these results and the descriptive results in the preceding chapter is discussed in Chapter 8.

CHAPTER 8:

DISCUSSIONS AND CONCLUSIONS

8.1 Overview

The previous two chapters documented the results of both the Corporate Environmental Disclosure Quantity (CEDQty) and Corporate Environmental Disclosure Quality (CEDQ). This chapter will engage in in-depth discussion about those results and conclude this thesis by offering reflections on the Corporate Environmental Disclosure (CED) practices in Malaysia, as well as directions for future research. Given that CED forms part of the Corporate Sustainability Disclosure (CSD), the discussion in this chapter uses CED and CSD interchangeably. Section 8.2 aligns the key findings of this thesis with the research objectives, research questions and hypotheses. Reflections on the change in the institutional environment and CED are discussed in Section 8.3 from the perspective of the CED reporting medium, changes in the overall CEDQty and CEDQ, and changes in the reporting content of CEDQty and CEDQ over time. Section 8.4 discusses the effects of Malaysian company-specific characteristics on both CEDQty and CEDQ. Section 8.5 discusses the theoretical and the empirical implications of this study. Section 8.6 presents the limitations of this thesis and directions for future research, and section 8.7 offers concluding remarks on the implications and relevance of this thesis to CED practices in Malaysia.

8.2 Thesis Objectives and Summary of Key Findings

This thesis offers important insights on both the quantity (CEDQty) and quality (CEDQ) of CED practices of a range of Malaysian publicly-listed companies. This thesis extends prior studies by simultaneously examining the quantity and quality of CED, which has been identified as lacking in the CED context (Chapter 3). For examining CED, this thesis draws the sample companies from the three

Environmentally-Sensitive Industries (ESI), namely, the utilities, energy, and materials industries. The thesis has analysed a total of 411 Annual Reports (ARs) and Sustainability Reports (SRs) of 135 Malaysian companies for the reporting year 2006, 2008, and 2014 (Chapter 5). The use of a panel data design provides a comprehensive understanding of the evolving nature of the CED issue within the same set of Malaysian ESI companies at particular points in time, and over time, consistent with the proposed theoretical framework.

The central objective of this thesis was to theoretically and empirically investigate how the changing political and economic institutional environment in Malaysia has influenced CEDQty and CEDQ by Malaysian listed ESI companies. To provide a strong foundation for understanding this phenomenon, the first research objective of this thesis was to develop a framework that enriches the understanding of the pattern of CEDQty and CEDQ in Malaysia, by integrating external and internal factors of CED (Chapter 4). A framework of CED was developed to conceptualise CED by Malaysian companies at particular points in time, and over time. The thesis took a multi-theoretical perspective of institutional, Islamic accountability and resource-based theories to examine factors influencing CEDQty and CEDQ (Chapter 2 and 4). Findings of the study support the view that each theory has its own strength and they complements each other, instead of contrasting and competing (Cairney, 2013; Clarkson, Overell, et al., 2011).

To empirically test the theoretical framework, this thesis has systematically examined CEDQty and CEDQ by Malaysian listed companies in two ways. First, by describing the changing patterns of CEDQty and CEDQ, and second, by investigating factors affecting both CEDQty and CEDQ. The acceptance of each of the hypotheses is categorised as high support, moderate support and limited support. Such distinction is used to assist the discussion of the empirical findings.

First, high support is accorded when a variable is statistically significant either in the overall CEDQty or CEDQ, or in at least five dimensions of CEDQty or CEDQ, or in a minimum of 21 individual items of either CEDQty or CEDQ. Second,

moderate support refers to a variable that is found to be statistically significant in at least three dimensions of CEDQty or CEDQ, or a minimum of 11 individual items of either CEDQty or CEDQ. Finally, limited support represents a variable that is statistically significant in less than three dimensions of CEDQty or CEDQ, or in less than 11 individual items of either CEDQty or CEDQ.

The second research objective addressed was whether the pattern of CEDQty and CEDQ practices have changed over time in the Malaysian institutional environment (Chapter 6). Consequently, the findings answered the following three research questions:

RQ1: What is the extent of CEDQty that Malaysian companies report in both annual and sustainability reports (ARs and SRs)? How have patterns differed between 2006, 2008 and 2014?

RQ2: What is the extent of CEDQ that Malaysian companies report in both annual and sustainability reports (ARs and SRs)? How have patterns differed between 2006, 2008 and 2014?

RQ3: To what extent have international and Malaysian guidelines influenced CED by Malaysian companies?

The third research objective of this thesis was to advance the analysis of the influence of both institutional changes and company-specific characteristics on CEDQty and CEDQ in Malaysia (Chapter 7). To achieve this objective, this thesis has evaluated institutional changes, Islamic influence, corporate governance, financial performance and control variables. They include 16 variables: institutional changes between 2006 and 2008 (Y2006), institutional changes between 2008 and 2014 (Y2014), *Shari'ah*-compliant status (SHA), a Muslim Chairperson (CHAIR), a Muslim CEO (CEO), female Chairperson (CHAIRG), female CEO (CEOG), government institutional ownership (GOVT), non-government institutional ownership (XGOVT), board size (BS), board independence (ID), women on boards (WOB), profitability (PRT), leverage (LEV), company size (SIZE) and industry

membership (IND). Except for company size and industry membership which are control variables, this thesis empirically tested the other 14 variables.

This thesis has extended prior research by introducing new variables (such as CHAIR and CEO) and offering fresh insights of existing variables: some (such as GOVT and XGOVT) in regard to the Malaysian context, and some (such as ID and WOB) in the CED research based on developing countries. All these variables were tested through 13 hypotheses for the CEDQty and CEDQ, respectively.

The findings of the study help to explain how the Malaysian changing political and economic institutional environment has influenced Malaysian company-specific characteristics, and how combined institutional changes and company characteristics have influenced CEDQty and CEDQ by addressing the following seven research questions:

- RQ4: How are both patterns of CEDQty and CEDQ, and factors influencing their reporting in Malaysia explained in the context of institutional, Islamic accountability and resource-based theories?*
- RQ5: What is the extent of the relationship, if any, between CEDQty and Islamic influence? If a relationship exists, how does it differ among CEDQty dimension?*
- RQ6: What is the extent of the relationship, if any, between CEDQ and Islamic influence? If a relationship exists, how does it differ among CEDQ dimension?*
- RQ7: What is the extent of the relationship, if any, between CEDQty and corporate governance? If a relationship exists, how does it differ among CEDQty dimensions?*

RQ8: What is the extent of the relationship, if any, between CEDQ and corporate governance? If a relationship exists, how does it differ among CEDQ dimensions?

RQ9: What is the extent of the relationship, if any, between CEDQty and financial performance? If a relationship exists, how does it differ among CEDQty dimensions?

RQ10: What is the extent of the relationship, if any, between CEDQ and financial performance? If a relationship exists, how does it differ among CEDQ dimensions?

The findings of this thesis reflect how the changing institutional environment spanning between 2006 and 2008, and those between 2008 and 2014 at the international and Malaysian levels have influenced the CEDQty and CEDQ by Malaysian companies. This thesis manifests this by designing a research instrument, that is, a CED index, based on the international and Malaysian guidelines (Chapter 5). The reporting patterns of CEDQty and CEDQ based on this index have been analysed from the perspectives of reporting medium, overall score of CEDQty and CEDQ, and content of CEDQty and CEDQ.

Overall findings of these patterns support the notion that companies' CED practices are dependent on the country's context (Belal and Momin, 2009; Patten, 2015). Based upon theoretical framework of this thesis, there is a strong support that the changing political and social context in Malaysia through the fundamental institutional change of government and CSD effort (represented by the time factors Y2006 and Y2014, when compared with Y2008), has influenced the CED reporting by Malaysian companies. This is evidenced from the high support of the influence of institutional changes between 2006 and 2008 (Y2006), and between 2008 and 2014 (Y2014) on CEDQty and CEDQ (Table 7-10 for H1.1c & H1.1d; Table 7-11 for H1.2c & H1.2d).

Specifically, this thesis has found an institutional effect on the reporting medium, overall scores and content of CED reporting by the 135 Malaysian ESI companies. Findings related to reporting medium reveal that the Malaysian companies predominantly used AR instead of SR as their main reporting medium for CED. In fact, there was no significant shift from the use of AR to SR in conveying CED information from 2006 to 2014. Detailed discussion of these results is presented in Section 8.3.1.

Findings on the overall CEDQty and CEDQ scores (based on descriptive and multivariate analyses) support institutional theory's view of the evolving nature of the reporting behaviour of CED by Malaysian companies. This is evidenced by the relatively low but improving overall CEDQty and CEDQ scores by sample companies in this thesis (Table 6-2).

Findings also show that for each year, differences in the average overall CEDQty and CEDQ scores between three industries were significant (Table 6-7). Companies in the utilities industry scored highest in the average overall CEDQty and CEDQ scores. This was followed by companies in the energy industry and the last was the materials industry (Figure 6-11 to 6-13). This suggests that the utilities industry led the reporting compared to the other two industries (energy and materials) over time. Detailed discussion on the results of average overall CEDQty and CEDQ scores is presented in Section 8.3.2.

Findings regarding the change in the content of CEDQty and CEDQ by dimension, item, and the alignment with the international versus the Malaysian reporting guidelines over the three reporting years, again support that companies' CED practices are dependent on the Malaysian institutional effects. These institutional effects between 2006 and 2014 include the coercive pressures (e.g., BM, SCM), normative pressures (e.g., professional accounting bodies) and cultural-cognitive (e.g., industry memberships, religious beliefs). The significant increase in CEDQty (19 individual items and all 6 dimensions) and CEDQ (17 individual items and all 6 dimensions) in 2008 when compared to 2006 indicates that the Malaysian

institutional changes that occurred between 2006 and 2008 had a positive impact on the reporting of CED by the sample of Malaysian companies. These findings support institutional theory's view that the changing institutional environment in Malaysia between 2006 and 2008, mainly because of the BM coercive pressure, influenced companies to increase their CED.

Meanwhile, the mixed findings on the impact of the Malaysian institutional changes between 2008 and 2014 on CEDQty (significant positive on 7 individual items and 2 dimensions; significant negative on 1 individual item and 1 dimension) and CEDQ (significant positive on 6 individual items and 2 dimensions; significant negative on 1 individual item and 1 dimension) support the institutional proposition that institutional pressures are not monolithic (Hoffman, 2001). Indeed, institutional pressures from 2008 to 2014 had changed due to the changing Malaysian institutional environment between these periods (see Section 8.3 for detailed). Companies would have varying interpretations about these institutional pressures for reporting CED, and in turn varying strategic responses for reporting CED as manifested in the reported items and dimensions.

Finally, for the change in reporting content based on the alignment with the international versus the Malaysian reporting guidelines, between 2006 and 2008, the Malaysian companies had a higher level of reporting on items that demonstrate their adherence to 'both the international and Malaysian guidelines', than items in 'international guidelines only' and 'Malaysian guidelines only'. However, this had shifted between 2008 and 2014 when the change in the 'international guidelines only' items were more than those in 'both the international and Malaysian guidelines' and 'Malaysian guidelines only'. Further detailed discussion of changes in reporting content is provided in Section 8.3.3.

In relation to the effect of Malaysian company-specific characteristics on CED, results of the multivariate analysis provide support to the influence of all 12 variables, except profitability (PRT) and leverage (LEV) on CEDQty (Table 7-10). Of the accepted hypotheses relating to Malaysian company-specific characteristics,

two hypotheses are highly supported (XGOVT and WOB). The remaining eight hypotheses have limited support (SHA, CHAIR, CEO, CHAIRG, CEOG, GOVT, BS and ID).

The multivariate results of CEDQ (Table 7-11) indicate that of all the 12 Malaysian specific-characteristics variables tested, 11 hypotheses are supported, and one hypothesis is rejected (SHA). Among the 11 accepted hypotheses, three hypotheses have high support (CHAIRG, XGOVT, and WOB) and eight hypotheses have limited support (CHAIR, CEO, CEOG, GOVT, BS, ID, PRT and LEV). Discussions of the results from hypotheses testing of CEDQty and CEDQ are provided in Section 8.4.

8.3 Effects of the Changing Institutional Environment on Corporate Environmental Disclosure Reporting

This thesis examines whether the Malaysian changing institutional environment does have impact on the reporting of CEDQty and CEDQ of the Malaysian companies in the utilities, energy and materials industries from 2006 to 2014. To reiterate, the Malaysian changing institutional environment is split into two periods: 2006 to 2008, and 2008 to 2014.

The 2006 to 2008 period refers to the Malaysian changing institutional environment of CED, mainly due to the mandatory requirement of CSD via the revised *2006 BM MM Listing Requirements* and *2006 BM CSR Framework* by BM; revised *2007 MCCG* by SCM; revised bi-annual issuance of *Shari'ah*-compliant status companies listing by *Shari'ah* Advisory Council (SAC); and the existing sustainability reporting awards to companies by Malaysian professional accounting bodies. Within this period, at the international organisational field of CED, the revised 2006 GRI3 was issued.

The 2008 to 2014 period refers to the Malaysian changing institutional environment of CED due to issuance of several follow-up pronouncements: the *2009 National*

Policy on Climate Change; 2009 National Policy on Green Technology; Environmental Quality (Industrial Effluent) Regulations 2009; Malaysian Environmental Quality Act 1974 (Amended 2012); 2012 MCCG, 2012 Shari'ah screening method, and the new 2009 sustainability reporting awards by Malaysian professional accounting bodies. The issuance of these pronouncements indicates two issues. First, the evolving nature of institutions. Second, offering some guidelines on the role of companies in accounting for the environment as envisioned in *Vision 2020*. Within this period also, the international institutional constituents had issued the revised 2011 GRI3.1, revised 2013 GRI4, and new 2013 IR to reflect the changing international institutional environment of CED.

In looking at the changes in CED reporting spanning these two periods, this thesis examines the reporting of CEDQty based on the presence of CED items in the CED index, while the reporting of CEDQ is established in the range of scale from narrative to quantifiable information. Based on the theoretical framework (Chapter 4), the results of both CEDQty and CEDQ reflect the impact of both the international and Malaysian changing institutional environment, and the effect of Malaysian company-specific characteristics on CEDQty and CEDQ practices (Chapter 6 and Chapter 7). This section discusses the results of Malaysian changing institutional environment on CED from the reporting medium, the overall reporting CEDQty and CEDQ, and the content of reporting (dimension and item, and international versus Malaysian guidelines).

8.3.1 Changes in CED Reporting Medium

This thesis extends prior studies by examining the pattern of the CED communication in both AR and SR. Findings of this thesis reveal that the sample companies continue to use AR as the main reporting medium for CED, not SR. This is evidenced when SR comprises only one percent of the total 411 reports examined in this thesis (Figure 6-2). Companies that produced SR had used both AR and SR by covering different extent of CED information in both media.

Regarding the change over time, there was no significant shift from the use of AR to SR as a reporting medium for communicating CED from 2006 to 2014 (Figure 6-1). Although this is consistent with earlier CED literature (e.g. Amran and Devi, 2008; Gray et al., 1995a), it is inconsistent with the recent findings in the CED literature (Ernst & Young and Boston College Centre, 2014; Yang and Farley, 2016). An important finding of this thesis is that the majority of Malaysian companies used AR as their dominant reporting medium for communicating CED, not SR, as evidenced by only one sample company had used SR in 2008 to disclose CED. The company that published SR (YTL Corporation Berhad) is a member of the utilities industry, has international auditor, and has overseas operation in developed economies including the UK and Australia. The release of SR by this company would suggest it models international practice. Hence, it can be considered as a mimetic behaviour where CED in developed economies has a long institutional history (Gray et al., 1995b; Yang et al., 2015). This is in tune with Scott's (2014) cultural-cognitive aspect of institutional theory, by which companies of developing countries follow the successful companies in developed countries to establish their legitimacy when facing an uncertain environment in the international market.

Although there was a further increase of SR in 2014 (total 5 of 135 companies from sample industries), it is still relatively low in the reporting of CED by Malaysian companies in the form of SR compared to the international practices. For example, the KPMG international survey revealed that in 2015, 92% of the world's largest companies (G250) and 73% of the largest (top 100) companies undertook SR (KPMG, 2015 p. 30). One important reason for this difference is the *2006 BM MM Listing Requirements* of Bursa Malaysia (2006c) which requires Malaysian listed companies to provide CED in their ARs, and not SRs. Thus, the preparation of AR alone is sufficient in meeting the regulative pressures in Malaysia exerted by the stock exchange in order to secure their legitimacy. This finding supports institutional theory's views about the salient effect of regulative institution (Unerman and Bennett, 2004) on the choice of reporting medium by Malaysian companies. Moreover, the same KPMG survey also disclosed that in 2015, 56% of

the sample companies provided CED through AR, compared to 4% in 2008 (KPMG, 2015, p. 36), indicating that Malaysia is not the only country that requires the reporting of CED in AR. In fact, some developed economies, including the UK and France, have also enacted that the mandatory environmental information be disclosed in AR of their companies. The growth in the use of AR as the reporting medium of CED for these countries is resulting from both the increasing demand from their shareholders in incorporating non-financial information with financial information, and the regulations of using AR as a reporting medium of CED in the stated countries (KPMG, 2015).

This finding about the CED medium by the Malaysian companies supports the use of an institutional theory perspective in explaining the variation in the medium of communication for CED. Findings support institutional theory's view that CED is context specific. It depends on the interpretation of which medium is suitable for the reporting of CED by the institutional constituents (e.g., regulators, industry members, professional accounting bodies) at the country-level. In the Malaysian context, CED through AR is deemed to be sufficient by the influential institutional constituents (e.g., Bursa Malaysia or BM). Hence, Malaysian companies can maintain their legitimacy by using AR alone to report CED, and hence, there is no need for the use of SR to report CED. This finding also shows that the same media of communication (e.g., disclosure via SR) in developed economies may not be well suited to emerging economies such as Malaysia. This finding lends support to the argument of Belal and Momin (2009) and Patten (2015) that a contextual analysis of a given country is necessary to explain CED variation.

The preparation of SR is likely to cause companies to incur additional costs for reporting as companies need to add different communication media to account specifically for CED. This may increase their cost burden and potentially lead to inefficient resource allocation for attending to the very same area of reporting (Farneti and Guthrie, 2009). Thus, the likelihood that Malaysian companies will shift to SR in the future is low, given that the *BM MM Listing Requirements* still maintain AR as a compulsory communication medium for CSD, with a special

segment for Sustainability Disclosure (Bursa Malaysia, 2015b). Despite this, the comparative results of CED incidences based on the five sample companies that provided SR in addition to AR, revealed that the SR complements AR. However, the extent of CED coverage in the SR is different from the AR. Those five companies shared the common characteristics of having international operations, a male CEO, a minimum board size of eight members and a high proportion of women on boards. This result suggests that although CED through AR is compulsory, these companies may consider that CED via SR is also valuable to be in line with international practices as all of five companies engaged in the international market. Therefore, this clearly signals that SR complements AR and omitting SR from the analysis of CED may distort the full picture of the CED practices of a company. This is so because companies may likely use different channels of reporting. Hence, it is important to incorporate both AR and SR in the studies of CED as they provide a wider coverage of CED disclosed by Malaysian companies, compared to AR only. This finding provides a strong support for institutional theory's perspectives on the individual company's strategic response to institutional pressures of the disclosure medium of CED (either AR alone or both AR and SR) due to their specific sets of characteristics.

Another possible reason for the lack of CED through SR may be due to the shift to web disclosure practices by the sample companies, as discovered in the study of Turmin et al. (2015) who found that 82% of 380 Malaysian publicly-listed companies sampled in their study provided web disclosures. This is similar to the findings in other country context, for example, Chong et al. (2016) in New Zealand, Zhang et al. (2007) in China, and Joshi and Gao (2009) of worldwide companies. An explanation for the shift to web disclosures is due to the belief that stakeholders are concern about how companies manage their sustainability issues (Chong et al., 2016; Joshi and Gao, 2009). The observation of randomly web disclosures of the sample companies in this thesis indicates that the shift to web disclosures of CED exists (see Section 5.3). This finding, however, requires further studies to understand how and why CED via web disclosures is practiced by Malaysian companies and whether it supports or contradicts previous studies.

8.3.2 Changes in the Overall CEDQty and CEDQ Over Time

Findings of this thesis show that there are strong relationships between institutional changes and both CEDQty and CEDQ. Particularly, both the institutional changes between 2006 and 2008, and between 2008 and 2014 had positively influenced the overall reporting of CEDQty and CEDQ. This has confirmed why there were significant increases in the quantity and the quality of CED over the reporting years of 2006, 2008 and 2014 in the overall reporting of CEDQty and CEDQ, each of the six dimensions of CEDQty and CEDQ, and all but two of the 30 individual items of CEDQty and CEDQ. These findings provide evidence that the institutional environments of CED provide the context for the increase in reporting of CED in Malaysia. This is consistent with multi-level institutional analysis (including the political and economic environments at international and national levels, organisational field level, and individual organisation level) based in institutional theory that serves as the main theoretical framework for this thesis.

At each level, institutional pressures exist. Consequently, organisations that were subject to these pressures responded according to their own interpretations of these pressures. Over space and time, institutions are evolving, so do institutional pressures (Scott, 2014). Based upon this argument, this thesis provides support that differences in the CED reporting over time resulted from the converging institutional pressures from the international and Malaysian environments on CED reporting by Malaysian companies. The reporting patterns by Malaysian companies then reflect their divergent institutional interpretations to CED (in terms of CEDQty and CEDQ) that resulted from the effect of the Malaysia's changing political and economic environment, and company-specific characteristics.

Regarding the effect of the changing political and economic environment of Malaysia on CED, the findings of the significant increase in CEDQty and CEDQ from 2006 to 2008 (overall, all 6 dimensions and the majority of the items) indicate that over time there was a radical change in the Malaysian institutional environment for the reporting of CED. This change was mainly driven by the coercive force from

the Malaysian Government through BM (Malaysia's stock exchange) through the requirement of the *2006 BM MM Listing Requirements* for reporting of CSD (CED as part of it). This requirement was made compulsory to all Malaysian publicly-listed companies effective from 2007.

In preparing the CSD, companies are also required to refer to the *2006 BM CSR Framework* that classifies CSD into four areas including CED. Although the *2006 BM CSR Framework* lacks detailed guidance of the format, content and extent of CED, this coercive pressure created the imperative for companies to comply with the requirement through CED. This finding about the coercive pressure of CED exerted by BM on Malaysian listed companies is consistent with Othman et al. (2011) and Hamid et al. (2015) who also found that BM plays a very significant role in changing the behaviour of CED among Malaysian companies after 2007.

The coercive pressure of BM was also acknowledged in the KPMG (2015) international survey as a continuing pressure for the CED reporting by the Malaysian companies. In this thesis, the BM's coercive institutional pressure was motivated by benchmarking with the international best practices in CED (e.g., GRI), and by its commitment to realising the vision of Malaysia moving towards a developed economy as outlined in *Vision 2020* (Bursa Malaysia, 2018; Malaysian Government, 2001, 2006c, 2006b). A substantial increase in the CED responses by companies supports the institutional theory view that the influence of regulative institutions (e.g., BM) is more powerful than normative and mimetic institutions at the early stage of defining an organisational field of CED (Unerman and Bennett, 2004). This is consistent with the studies by Criado-Jimenez et al. (2008) and Abreu et al. (2012) who found that coercive forces are the main reason for increased CED (and CSD) adoption in Spain and Brazil.

One explanation why the Malaysian Government enforced the coercive pressure of CSD reporting is due to the influence of international institutional pressures (e.g., reporting of CED based on GRI (KPMG, 2005)) and on-going interactions with the international institutional constituents on climate change, especially after the first

Meeting of the Parties to the Kyoto Protocol in 2005. In that meeting, the Malaysian Government made a commitment to reduce its carbon emission by 40% by 2020, from the 2005 baseline (Malaysian Government, 2010a). Hence, the coercive pressure of CED exerted by the Malaysian Government on companies is convergent with the influence of international institutional pressures of CED on companies.

Meanwhile, the low score of CEDQty and CEDQ in 2006 reflected the CED position in Malaysia prior to the *2006 BM MM Listing Requirements* (representing regulative institutional pressures). In the absence of this regulative pressure, the Malaysian companies encountered uncertainties whether to report CED. Hence, there was higher non-disclosure during 2006 than 2008, resulting in a low 2006 score of CEDQty. This is despite the promotion of CED since 2002 by the professional accounting bodies in Malaysia that manifest the normative pressure (through CED awards such as NACRA on Best Environmental Reporting, and ACCA MaSRA Awards – see Section 4.3.2.3). However, the force from this normative institution is not sufficient to influence all the sample companies to provide CEDQty and CEDQ.

Despite this insufficient pressure in 2006, the findings indicate that companies in the utilities industry were the early movers of CEDQty among the three ESI (compared to the energy and materials industries). In fact, all companies in the utilities industry reported CEDQty, while there were many non-reporters from the other industries (Figure 6-8).

Nevertheless, findings about the influence of industry membership are consistent with institutional theory because industry membership is an example of company characteristics that has exerted normative institutional pressures on companies. Each individual company-specific characteristics would have its own perception on institutional pressures on CED, likewise the utilities industry. Since the utilities industry in Malaysia (including electricity, gas and water) is subjected to combined coercive and normative pressures from industry regulations and associations (such as the Electricity Supply Act 1990 by the Energy Commission Malaysia, Sarawak

Electricity Supply Ordinance 1982, Electricity Supply (Successor Company) Act 1990, Lembaga Letrik Sabah Act 1983, the Malaysian Water Association, the Malaysian Oil and Gas Services Council), and achievement of the NKRA (improving rural development – see Chapter 4) by the Malaysian Government, these combined coercive and normative pressures result in the utilities industry being seen as a highly ESI. This explains why all sample companies in this industry reported environmental information. This is in contrast with the study by Rao et al. (2012) who reported the materials industry as more highly ESI than the utilities industry. These findings also supports the resource-based theory argument that early movers are likely to gain competitive advantage (in various forms) after improving their CED reporting behaviour (Russo and Fouts, 1997).

Over time, institutions and institutional pressures evolve in the organisational field of CED. Thus, further growth in the CEDQty and CEDQ score in 2014 compared to 2008 (overall, 2 dimensions and 6 to 7 items) indicate the continued converging institutional pressures by institutional constituents (e.g., BM, SCM, international and national industry associations, international and domestic accounting professional bodies, NGOs) on Malaysian companies' CED in 2014. These converging pressures in turn create forces for late adopters in mimicking the CED behaviour of early movers to achieve legitimacy (DiMaggio and Powell, 1983). Thus, the growth in 2014 can be explained by the influence of cultural-cognitive (mimetic) institutional influence.

The reporting of CED has become institutionalised in those early adopters' reporting practice. It has become 'take it for granted' reporting practice (Scott, 2014). This can be evidenced in this thesis from a continued reporting from 2006 to 2014 by the sample companies in the utilities industry. For companies that have not reported before tend to follow their industry leader (e.g., Ta Ann Bhd for the materials industry) in the reporting of CED. The mimetic institutional influences on CED reporting help to explain the continued increase in the reporting of both overall CEDQty and CEDQ in 2014. However, since the industry leader was also selective in choosing the reported CED items and the extent of such reporting, the follower

companies would also be selective in their reporting. Eventually, this results to the differing CED practices by the sample Malaysian companies (see Section 8.4 for further discussion about the role of company characteristics in modifying the institutional effects on CED).

According to Scott (2014), cultural cognitive pressure is a self-imposed pressure by companies. Due to no significant coercive institutional change between 2008 and 2014, the key factor influencing the continued growth in CED by Malaysian companies can be explained by the cultural-cognitive and the normative institutional influences of CED. For instance, through the continuing interaction of constituents in the organisational field of CED, the Malaysian Government has renewed its commitment to reduce carbon emission by 45% (relative to 2005 baseline) by 2030 following the decisions of UNFCCC meeting in Poland in 2013, and in Peru in 2014.

In regard to normative pressure, in the Malaysian context, the normative institutions are represented by professional accounting bodies (e.g., through additional sustainability reporting awards) and industry associations. These normative institutions also play their parts in promoting the reporting of CED through GRI or IR according to the recent international practices (KPMG, 2015).

Despite the existence of three forms of institutional pressures, the CEDQty and CEDQ scores remain at relatively low level for each reporting years when compared with a study in developed economies (Chauvey et al., 2015). This implies that Malaysian companies are not providing sufficient CED details to stakeholders, specifically quantitative information (non-monetary or monetary). This finding is consistent with studies that reported companies prefer to furnish no disclosure or brief qualitative CED information in their annual and/or sustainability reports (Alberici and Querci, 2016; Cormier et al., 2005).

An explanation for the relatively low score of CEDQty and CEDQ is because BM and SCM (representing regulatory pressures) exert less coercive pressure than might be anticipated on companies in following the best practices although

regulatory pressure in general is powerful in increasing the reporting behaviour. This is evidenced when BM enforces Malaysian publicly-listed companies to report CSD effective from 2007 through the issuance *2006 BM MM Listing Requirements*. However, the mandatory requirement is vague because the supplement document for BM's CSD requirement (*2006 BM CSR Framework*) did not specify what ought to be the format, reporting content and extent of CED (although the framework defines CSD comprised of marketplace, workplace, community and environment). This has led to companies having their own interpretation of the regulative pressures represented by the *2006 BM MM Listing Requirements* and *2006 BM CSR Framework*, as evidenced by the findings of this thesis. Hence, these findings fit in institutional theory in that companies adopt a minimalist approach to maintain their legitimacy by reporting CSD at the basic level.

Moreover, when there is little guidance by BM on how to report quantified CED information, the Malaysian companies would experience technical problems of quantifying their environmental activities. When faced with uncertainties, only some companies would imitate the best available benchmark, while the remaining companies would use their own discretion for not reporting. Thus, providing a high CED could be problematic due to the nature of CED being subject to interpretation by reporting companies due to the unique organizational characteristics of such companies (Lin and Ho, 2016). Consistent with institutional theory and resource-based theory, no salient coercive institutional pressures on the details of CED reporting result in the minimum approach of CED by Malaysian companies. This explains the overall low level of CED by Malaysian companies as their legitimacy is not threatened, and hence no need for a high level of CED.

Consistent with the resource-based theory, critical institutional constituents (e.g., BM as a coercive institutional constituent) are resources to institutions. These institutional constituents produce powerful enforce pressures on the reporting of CED. As a result, companies need to strategically respond to institutional pressures in order to sustain the continued resources supply of those institutional constituents. Thus, the strong relationship between institutional changes and both CEDQty and

CEDQ found in this thesis indicates the convergence of resource providers in exerting CED pressures on companies has led to the positive direction of companies to disclose environmental information. However, the low level of CED by Malaysian companies implies that companies may need additional resources to report a higher level of CED. This is because in responding to institutional pressures for CED, companies would encounter difficulties in quantifying CED information in terms of non-monetary amount or monetary amount.

Quantifying CED information in terms of amount requires companies to have sound tracking mechanisms (Adams, 2002). With these mechanisms, companies can quantify the measures of, for example, water reduction usage, and accordingly measure their cost savings from this reduction. This would also enable companies and stakeholders to measure and prolong water sustainability which benefits all stakeholders. However, if companies fail to allocate their resources to implement such mechanisms, they would consequently either choose not to report or report qualitative CED rather than quantitative CED, and this eventually results in low CED. Thus, the level of extensiveness of CED by Malaysian companies depends on whether companies have been involved in both environmental activities and implemented specific measures of environmental activities. In this case, efficient resource management is desirable to ensure informative CED so that companies demonstrate their accountability through enhanced transparency. This is because quantified CED information provides objective measures to better assess company performance than non-quantified CED information for their long-term survival especially related to their environmental commitment which is consistent with resource-based theory (Jenkins and Yakovleva, 2006).

While results show the low but increasing pattern of CED of sample companies from 2006 to 2014, the relatively high but decreasing pattern of complete non-disclosure (62 in 2006, 11 in 2008, 7 in 2014) can be explained by the following four possible factors.

First, it could be suggested that there is a complete absence of environmental activities by companies. It is clear from the descriptive statistics that non-disclosure companies exist in each reporting year although CSD is mandatory. Those non-disclosure companies may possibly not have altruistic motives and thus totally disregard environmental responsibilities. This potentially results in companies having nothing to disclose and leads to non-disclosure of CED.

Second, companies may engage in environmental activities, however, they may consider that their activities and associated costs are not material. As a result, they may possibly interpret that both the activities and costs are immaterial to be disclosed in the corporate reports (Jeffrey and Perkins, 2013; Stubbs and Higgins, 2018). This would potentially result in non-disclosure of CED.

Third, companies may be silent about environmental activities for political considerations. When companies begin to disclose their environmental activities and associated costs, they are exposed to stakeholders, especially environmental activists. As a result, these activists will expect companies to extend their environmental activities in the future. Thus, to avoid being the target of these activists, companies may opt not to disclose their CED (Belal and Cooper, 2011).

Finally, the enforcement of CED in Malaysia is hampered by vagueness in the guidelines. Although the requirement for Malaysian companies to provide CSD information in their annual report was effective from 2007, the requirement, especially related to CED is ambiguous, resulting in uncertainty about such disclosure (Hamid et al., 2015). Due to this circumstance, it could be argued that the enforcement mechanism becomes weak because no action could be taken against non-disclosure companies. Thus, opportunistic companies may take advantage by disregarding CED.

The above discussion about the changing pattern in the number of non-disclosure companies lend support to institutional theory that each of the three types of institutional pressures (regulative, normative and cultural-cognitive) are integrated. For instance, in the absence of regulative pressure in 2006, although the non-

disclosure companies were high, some Malaysian companies exercised CED reporting practices. This indicates that aside from regulative pressure, the reporting of CED can be influenced by normative and cultural-cognitive pressures (e.g., professional accounting bodies and industry associations). Since the inception of regulative pressure by BM, the non-disclosure companies decreased significantly in 2008. This again, is consistent with institutional theory that, although the three types of institutional pressures are integrated, one can be more influential than others at a point in time (Hoffman, 1999). Although the non-disclosure companies continued to decrease in 2014, the CED non-disclosure among ESI companies still exists. This indicates that despite the powerful regulative force by BM on Malaysian publicly-listed companies, BM needs to make further institutional changes by specifying CED requirement in its CSD requirement alongside a strong enforcement mechanism for CED. This is consistent with institutional theory that requires organisations to evolve due to the change in institutional dynamics (Hoffman, 2001).

8.3.3 Changes in the Content of CEDQty and CEDQ Over Time

As discussed in Chapter 3, most CED literature focuses on the changes of CED based on the overall disclosure, while very few studies have investigated the CED content according to its dimension and items. This thesis adds to the current literature by analysing the reporting patterns of CEDQty and CEDQ from the perspectives of reporting dimension and reporting item, in addition to the overall score discussed in the previous section.

Findings on the changes in CEDQty and CEDQ dimensions and items over time provide support to institutional theory that the international and Malaysian political and economic environment provides a context in shaping the content of CED, consistent with international studies (Holland and Foo, 2003; Yang and Farley, 2016). The findings suggest that CED at the international level (e.g., GRI, IIRC) has encouraged Malaysian constituents to join in the field of CER.

At the national level, the issue of CED is evolving resulting from ongoing interactions of Malaysian institutional constituents (e.g., BM, SCM, accounting professional bodies, industry membership) who define the field logic and exert convergent institutional pressures (regulative, normative and cultural-cognitive) on Malaysian companies. These pressures are modified by company-specific characteristics (e.g., female Chairperson, the proportion of institutional ownership, women on boards) which then are reflected through responses from companies in terms of reporting content of CED. This reporting pattern manifests companies' preferences of specific content. The following subsections discuss the changes in reporting content according to dimension and items (Section 8.3.3.1), and according to international and Malaysian guidelines (Section 8.3.3.2).

8.3.3.1 Changes in the CEDQty and CEDQ Dimension and Item

Findings on the reporting of six CEDQty and CEDQ dimensions and 30 items show that a Malaysian contextual environment has a distinct impact on each of these reporting patterns (Table 7-10 to 7.12). This is evidenced by the significant increase in the reporting of CEDQty (all 6 dimensions and 19 items) and CEDQ (all 6 dimensions and 17 items) between 2006 and 2008. However, between 2008 and 2014, there was mixed changes to the reporting content. There was a further increased in the reporting of CEDQty (2 dimensions: CEDQty D 'environmental compliance and risk', CEDQty F 'credibility'; and 7 items) and CEDQ (2 dimension: CEDQ B 'environmental actions and environmental performance indicators', CEDQ F 'credibility'; and 6 items). But, the reporting of the same one dimension C (environmental expenditures) and C1 item (investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency) for each CEDQty and CEDQ had decreased.

The impact of these institutional changes can be observed from the changing pattern of reporting on the six dimensions of each of CEDQty and CEDQ from 2006 to 2014 (see Section 6.6). The reporting of CEDQty A or CEDQ A (environmental governance) dimension corresponds to the Malaysia's regulatory pressure by BM

and national *Vision 2020* that emphasises the commitment to the environment. The reporting in most items in this dimension have been increased over time, with a consistently high reporting of item A1 (a statement on commitment to the protection of the environment) and A5 (board and/or employee training in relation to environmental management practices). Companies are providing a higher level of reporting on these two items because they want to signal their commitment to the environment. Consistent with institutional theory, companies maintain their legitimacy by signalling their environmental commitment through CED (Meyer and Rowan, 1977).

When extended to CEDQ, companies that reported items A1 and A5 had provided more qualitative incidence than quantitative incidence, suggesting that companies faced difficulties in measuring environmental governance in quantitative terms. The results show that Islamic influence, corporate governance, company size and industry membership do impact the content of reporting. Companies that have a *Shariah*-compliant status, having a higher proportion of non-government institutional ownership, and are larger in size have higher levels of CEDQty A1. Likewise, companies that are having a Muslim CEO, a higher proportion of non-government institutional ownership, and are larger in size have higher levels of CEDQ A1 (Table 7-13). Companies that are having a higher proportion of women on boards and are larger in size have higher levels of CEDQty A5. However, companies being in the energy industry are likely to have a lower level of CEDQ A5 when compared to companies in the utilities industry. These results suggest that various company characteristics modify the institutional impact on the content of CED. This is because CED is a multi-faceted construct and different companies would have varying interpretation of CED due to company characteristics (further discussion about how company characteristics modify the relationship between institutional environment factors and CED is provided in Section 8.4).

From 2006 to 2014, there was a changing pattern for the dimension of CEDQty B or CEDQ B (environmental actions and environmental performance indicators). Within this dimension, companies consistently have a high reporting of three

individual items: B1 (air emission and management), B4 (energy consumption and efficiency), and B10 (recycling/reuse/reduce items) over the three reporting years. High reporting levels of these three items corresponds directly to the international pressures for climate-change, indicating that the Malaysian companies are also concerned about the issues of the environment surrounding their international counterparts (Ernst & Young and Boston College Centre, 2014). This evidences the converging international and Malaysian institutional pressures of CED on Malaysian companies.

Among these three items, item B10 had the highest qualitative incidence while item B4 had the highest quantitative incidence. One explanation for the highest qualitative incidence in B10 is because although companies are exercising the activities of recycling/reuse/reduce, they may consider quantifying the activities as immaterial. Moreover, in Malaysia, these activities are still at its infancy stage, signalling the need for more institutional pressures on these activities. Meanwhile, the highest quantitative incidence in item B4 suggests that companies have better understanding of how to quantify CED information about energy consumption and efficiency. An example of energy consumption is electricity consumption. In Malaysia, companies can easily extract the information about their electricity consumption, but not electricity efficiency, through the billing received from the electricity providers. By having this on record, companies can furnish the quantified CED information on energy consumption. To help companies in measuring their energy efficiency, which eventually assist in the reporting of CED, it would be beneficial if the electricity providers also provide an analysis of electricity efficiency in their billing to customers.

A further examination of these three items in the dimension B of CEDQty and CEDQ show that companies that are larger in size tend to disclose higher level of items B1 and B4. Companies disclosing the item B10 have a higher proportion of government institutional ownership (Table 7-13). These findings again consistent with institutional theory because larger size companies and companies with government institutional ownership are more visible to institutional constituents

than smaller size companies due to their economic contributions and resources. Hence, they are subject to scrutinize monitoring by these constituents.

Among all six dimensions of each CEDQty and CEDQ, CEDQty C (environmental expenditures) dimension had the second lowest average incidences per item, while CEDQ C dimension had the highest average yearly score per company per item (Table 6-2). The main reason for the low average incidences per item is due to 49 companies (of 135) reporting each item in this dimension. Although the number of companies is low, these findings reveal that companies are willing to provide more quantitative information for items in this dimension as opposed to other dimensions. Within this dimension, companies that are larger in size consistently have the highest reporting of item C1 (investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency) for the three years when compared with the remaining two items. However, if these companies are in the energy and utilities industries, their reporting of item C1 is lower than companies in the utilities industry.

One explanation for the high reporting of item C1 is because this item appears in both the international and Malaysian guidelines. So, companies that have incurred costs in enhancing their environmental performance or efficiency would respond to both guidelines by reporting more of this item and are able to provide quantitative information. By doing so, companies are signalling their commitment to *Vision 2020* and indicating their readiness to respond to the international institutional pressures for gaining legitimacy. The reason to gain legitimacy is also associated with the fact that companies that provide this item are larger size companies. Due to the visibility as a large size company, there is a high tendency that companies would report this item by showing how much they would be willing to spend for enhancing environmental performance or efficiency. This is in agreement with Cormier et al. (2005) who supported that larger size companies are likely to increase CED due to legitimacy reason which is consistent with institutional theory and resource-based theory.

Despite the highest reporting of item C1 for the three reporting years, the decrease in reporting incidence of three items in 2014 suggests that companies do not provide or have limited budget allocation for improvement in environmental performance. Hence, they have nothing or limited information to report. Another explanation is that they may encounter technical challenges in identifying and allocating budget for improvement in environmental performance, leading them to decrease the propensity to report these items. Companies that are in the energy and materials industries are likely to have lower reporting of item C1 in 2014 than companies in the utilities industry. Arguably, this is because they have not fully recovered from the impact of the recession period during 2008-2009, resulting in them cutting the budget for environmental expenditures.

The continuous increase in the reporting of CEDQty D or CEDQ D (environmental compliance and risk) dimension from 2006 to 2014 indicates Malaysian companies have increased awareness on the impact of not complying with respective laws concerning the environment and the risks associated with it. When companies are not complying, they are exposing themselves to the risk of losing legitimacy (Meyer and Rowan, 1977) which all companies want to avoid. Thus, the significant increase in the reporting of item D1 (environmental compliance status of relevant laws and guidelines) in 2008 demonstrates that companies are making a serious effort in complying with relevant laws and guidelines pertaining to the environment. This is related to their concern for avoiding any consequences due to not complying. These companies that provide CEDQty D1 and CEDQ D1 are characterised by having a higher proportion of non-government institutional ownership and being larger in size. Over time, followers' companies are mimicking the effort of their leaders, resulting in the increased reporting for item D1 in 2014.

Findings also show that item D2 (environmental risks assessments) recorded a consistent increase over the three years. The increase in 2014 is significant for CEDQty D2 while not significant for CEDQ D2. An explanation for this is the impact of the 2012 MCCG by SCM (see Section 4.3.2.5). One of its principles related to the increase in item D2 is 'recognising and managing risks' (Principle 6)

that requires the board to establish a sound risk management framework. Since businesses' activities have some impact on the environment, and arguably this is the reason why companies having a higher proportion of institutional ownership and being larger in size have higher levels of item D2. However, since they could not provide quantitative details about the risk assessments, the increase of CEDQ D2 in 2014 is not significant. Nevertheless, companies in the energy and materials industries tend to have lower reporting of item D2 as opposed to those in the utilities industry.

Findings of the dimension CEDQ_{ty} E or CEDQ E (stakeholder engagement) show the increasing pattern of reporting from 2006 to 2014. The significant increase of all the four items in 2008 indicates that companies are responding to the institutional pressures exerted between 2006 and 2008. The highest increase in 2008 within this dimension is contributed by item E1 (employee environmental management programs within a company) that jumps from 5 companies to 20 companies (Figure 6-25). However, the reports are mainly qualitative information, indicating a low level of CEDQ. One explanation for the significant shift in this item in 2008 is because companies agree with the Malaysian Government policies on the importance of instilling environmental awareness within their individual organisation first before spreading the programmes to other stakeholders. Accordingly, by reporting more of this item in 2008 than 2006, companies would show their support to the Malaysian Government policies since this item exists only in the Malaysian guidelines (see Section 5.4.1.5). This again, is consistent with institutional theory that the reporting behaviour is shaped by the national context.

The highest increase of item E3 (donation and/or partnership with environmental organisation/external parties in relation to environmental campaign/practices) in 2014 corresponds to the practices promoted by the international and Malaysian institutional contexts. Within this period of change, companies are aware that they are playing an important role in supporting environmental programs by collaborating with institutions within their surroundings. Interestingly, companies that practice this are having women on boards and are larger in size, supporting the

influence of cultural-cognitive pressures due to gender differences on CED as proposed in institutional theory.

Findings show that the CEDQty F (credibility) dimension had the lowest average incidences per item with only 36 reporting companies per item (Table 6-2). Meanwhile, CEDQ F recorded an average yearly score per company per item of less than 2, indicating that most of the disclosure in this dimension is qualitative information. The main reason for this lowest number in reporting companies is because from 2006 to 2014, none of the sample companies are reporting item F1 (independent assurance of environmental disclosure). This is different from the finding of some authors (e.g. Asif et al., 2013; O'Dwyer and Owen, 2007; Yang and Farley, 2016) who reported a growth in the reporting of external assurance of CSD reports. One explanation is because given that the sample of ESI companies in this thesis have lower CED when compared to the rest of the world, independent assurance related to environmental disclosure is considered unnecessary and new to these companies. This is evidenced when the 'ACCA Mesra Awards 2006' recorded that British American Tobacco (Malaysia) Berhad was among the earliest companies that are reporting external assurance (ACCA Malaysia, 2006). However, this company is not within the category of ESI companies, and therefore does not influence the ESI companies to have and report the same item.

Despite no reporting of item F1, within this dimension, the highest reporting was found in item F2 (certification of environmental related standards), where this item is common to the international guidelines. An example of such certification is ISO 14001. The reason for this high reporting is over time the ESI companies have realised that such certification is essential to ensure their credibility in environmental practices. When they reported this item, they made their effort known to the stakeholders which eventually would increase their credibility as a company. The awareness about the importance of certification supports the theoretical argument of this thesis that when companies have on-going interactions with the organisational field, the pressures exerted by institutional environment surroundings the organisational field would influence their responses, and these

responses are translated through their content of reporting. This again, provides support to institutional theory that institutional constituents (e.g., customers, suppliers) have played their role in exerting pressures to companies.

Notably, companies that are larger in size have higher levels of item F5 (awards) in 2014. This item is applicable in the Malaysian guidelines. Although its increase in 2014 is significant, only a small number of companies are disclosing this item in their reporting. An explanation for this is either companies do not receive the environmental awards and therefore have nothing to report, or the awards organised by professional accounting bodies (represented normative pressures) have not become an incentive for companies to report. This findings is different from Anas et al. (2015) who found that awards for good CSR practices is the most important factor in influencing CSD.

Consistent with the earlier discussion (Section 8.3.2), overall findings of the changes in the dimensions and items suggest that various institutional pressures (regulative, normative, cultural-cognitive) have caused companies to have specific preference in CED reporting. However, the main reason for changes in the CED reporting behaviour from 2006 to 2008 is the effect of regulative institutional pressures by BM (e.g., *2006 BM MM Listing Requirements* and *2006 BM CSR Framework*). This suggests that the Malaysian Government through its various pronouncements and agencies has strong administrative capacity in pushing Malaysian publicly-listed companies to commit to environmental responsibility to achieve *Vision 2020* and to fulfill the commitment to Kyoto Protocol.

Meanwhile, the main reason for changes in the CED reporting behaviour from 2008 to 2014 is the effect of cultural-cognitive pressures because the implementation lags by non-CED reporters on specific dimension and individual items of CED. Companies that were lagged in reporting specific items and dimensions had been pressured by their counterparts in the organisational field to exhibit environmental responsibility by having some form of reporting. Again, this is consistent with institutional theory that states that although all three institutional pressures are

interweaved and difficult to distinguish, one can be more dominant than others at a point of time. The change in the dominance role of institutional forces between 2006 and 2014 again supports that institutions are evolving over time.

This also indicates that over time companies have changing perceptions about the sequence of important items which are due to the changing institutional environments for CED at the international and Malaysian levels. Despite this, their perception about shifting from qualitative information to quantitative information does not change. Their preference of reporting qualitative information suggests that companies choose this response to represent their advocacy to transparency without the burden to record quantified information. This could be asserted as companies are avoiding quantitative information because they probably do not have a proper system that records and monitors quantitative CED information. Consequently, companies could only manage reporting qualitative information due to institutional legitimacy resulting from the regulative pressures of *2006 BM MM Listing Requirements* and *2006 BM CSR Framework*. It is possible that companies are still at the learning stage in understanding the importance and benefits of providing quantitative information to their future survival, and thus require further time to comprehend such potentials.

Given that the earliest CSD effort in Malaysia was made in the late 1990s, it is unsurprising for companies in a developing country such as Malaysia to take some time to comprehend the importance of CED. This is because previous studies in developed countries (e.g. Guthrie and Parker, 1989) have recorded that an established company took about a hundred years to have a substantial improvement in the CED reporting. This reinforces the suitability of institutional theory in understanding the phenomenon of CED practices in Malaysia.

8.3.3.2 Changes in the Malaysian CED according to the International and Malaysian Guidelines

The findings of this study support the idea that the Malaysian institutional environment drives and shapes the content of CED. This is consistent with the

proposition of Adams (2002) and Belal and Momin (2009) that an analysis based on a country's contextual factors is important in understanding why there are variation in the practices of CED in different countries. The results regarding the content of CED between 'both international and Malaysian guidelines', 'international guidelines only' and 'Malaysian guidelines only' show that Malaysian companies tend to provide CED that show a greater convergence of the international and Malaysian guidelines, rather than the divergence of the 'international guidelines only' or 'Malaysian guidelines only'. This is evidenced in the highest reporting of 'both international and Malaysian guidelines' in each reporting years of 2006, 2008 and 2014 (Table 6-9). Over time, the results in 2008 continue to demonstrate a strong influence on the convergence of both guidelines in the reporting of CED by Malaysian companies. This is following the regulative pressure exerted by BM to require Malaysian companies to report CSR information in the annual report effective from 2007, through the *2006 BM MM Listing Requirements* and *2006 BM CSR Framework*. Although in 2014 there was a further, but smaller additional influence, Malaysian companies continued to provide reporting of CED that shows a convergence in both guidelines. This indicates that Malaysian companies consider the alignment of their CED is necessary, probably to secure legitimacy.

This study supports the greater influence of the convergence of the international and Malaysian guidelines, compared to the divergence influence of the 'international guidelines only' or 'Malaysian guidelines only' regarding the content of CED. This can have two plausible explanations. First, Malaysian companies have used English language as the main reporting language of corporate reports especially in annual and sustainability reports although Malay language is the first language of Malaysia. This is in contrast with countries that use their first language, other than English, for corporate reporting (Yang et al., 2015). The use of English language by Malaysian companies has expedited understanding and adherence to both the Malaysian and international guidelines regarding CED content because they are not facing any language barriers in implementing changes in the reporting of CED. Accordingly, this has shortened their learning cycle about CED and allows

them to align their perception with the expected perception and in how they respond towards CED.

Second, the alignment of the international and Malaysian guidelines signifies that the Malaysian Government are serious in ensuring the realisation of *Vision 2020*. This result validates that the Malaysian institutional environment has responded to the international institutional environment by incorporating policies, legislation and guidelines that meet the expectations of CED at international level. Although some of these Malaysian pronouncements did not explicitly mentioned CED in detail, the role of agencies in the Malaysian institutional environment, such as BM as the stock exchange and SCM as the market regulators, is crucial in encouraging and enforcing Malaysian companies to provide CEDQty and CEDQ. One important tenet stemming from this result is that one type of pressure, for example domestic regulative pressures, could push a big wave for a change, but may not be too strong without strong enforcement mechanisms to ensure a continuous change. This is evidenced through a combination of different types of pressures that explain why Malaysian companies report on items that show a convergence of the international and Malaysian guidelines.

Having discussed the effect of institutional changes between 2006 and 2014 on the changes in CED reporting medium, overall CEDQty and CEDQ, and the reporting content, the next section will discuss the impact of Malaysian company-specific characteristics on CED.

8.4 Effects of Malaysian Company-specific Characteristics on CEDQty and CEDQ

The final research objective of this thesis is to advance the empirical analysis of CEDQty and CEDQ practices by Malaysian companies. While the previous section has discussed this research objective by examining at how Malaysian institutional changes between 2006 and 2014 have influenced CED, this section focuses on the effect of Malaysian company-specific characteristics on both CEDQty and CEDQ.

The company-specific characteristics examined in this thesis are Islamic influence, corporate governance and financial performance. For testing the association of attributes of these characteristics with CED, this thesis develops 12 hypotheses for each of CEDQty and CEDQ.

Results in Chapter 7 (Table 7-10 and Table 7-11) mostly support the hypotheses that Malaysian company-specific characteristics of: Muslim Chairperson, Muslim CEO, female Chairperson, female CEO, government institutional ownership, non-government institutional ownership, board size, board independence and women on boards, have influenced CEDQty. A similar result was found for CEDQ. However, there are differences in the influence of *Shari'ah*-compliant status, profitability and leverage between CEDQty and CEDQ. While *Shari'ah*-compliant status has influenced CEDQty, it does not influence CEDQ. On the other hand, both profitability and leverage do not influence CEDQty, but influence CEDQ. These findings support the theoretical framework (in Chapter 4) that is primarily based on institutional theory. When other theories (Islamic accountability and resource-based theory) have specific relevance, those theories will be discussed concurrently in the specific section.

8.4.1 Islamic Influence

Little was found in the literature on the association between Islamic influence and CED. This thesis argues that Islamic influence through a company with *Shari'ah*-compliant status, Muslim Chairperson, and Muslim CEO can positively influence both CEDQty and CEDQ practices of Malaysian companies. Findings of this thesis provide new evidence in the worldwide context on the influence of Islam in CSD studies.

The most interesting findings are CEDQty and CEDQ are influenced by companies having a Muslim Chairperson or companies having a Muslim CEO. The results show that companies having Muslim Chairpersons or Muslim CEOs will have high CED due to the group of Muslim Chairpersons or Muslim CEOs will on average

have a high level of Islamic values than the group of non-Muslim Chairpersons or non-Muslim CEOs. Specifically, companies having a Muslim Chairperson are likely to have a higher reporting of items CEDQty B10 (recycling/reuse/reduce) and CEDQty E4 (engagement in supply chains in relation to products/services produced/offered). They are also likely to provide a higher quality of reporting for items CEDQ A2 (a statement's about a company's environmental management system), CEDQ B8 (land remediation, contamination or degradation) and CEDQ E4 (engagement in supply chains in relation to products/services produced/offered) than companies with a non-Muslim Chairperson.

Meanwhile, companies having a Muslim CEO are likely to report more of dimension C (environmental expenditures), items of C2 (operating costs of assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency) and F2 (certification of environmental related standards) of each CEDQty and CEDQ than companies with a non-Muslim CEO. The Muslim CEO also tends to have a higher reporting of items E2 (community outreach program) and F5 (awards) of CEDQty, and concurrently have a higher quality reporting of CEDQ A1 (a statement on commitment to the protection of the environment), B8 (land remediation, contamination or degradation) and C1 (investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency). Another important finding is a company with *Shari'ah*-compliant status positively influence some CEDQty items but did not influenced CEDQ.

The significant positive influence of having a Muslim Chairperson, having a Muslim CEO and *Shari'ah*-compliant status on the reporting of CED is consistent with the regulative, normative and cultural-cognitive aspect of institutional theory. At the same time, it is consistent with Islamic accountability and resource-based theory. The regulative aspect of institutional theory is supported in two ways. First, the CEDQty of certain items is likely higher for *Shari'ah*-compliant companies than non-*Shari'ah*-compliant companies. This indicates that the BM has played a significant part in requiring publicly-listed companies to report CSD and that Securities Commission Malaysia (SCM) also has played its role in distinguishing

Shari'ah-compliant from non-*Shari'ah*-compliant companies by requiring the former to be listed on the Islamic Capital Market (ICM). Second, when the submission to God is compulsory for all Muslim Chairpersons and CEOs, companies are likely to report CED. Such regulative forces through a Muslim Chairperson, a Muslim CEO and companies with *Shari'ah*-compliant status are likely to increase the reporting of CED and for *Shari'ah*-compliant status it is restricted to CEDQty. The finding of differences in the CEDQty practices between *Shari'ah*-compliant status and non-*Shari'ah*-compliant status in this thesis is consistent with studies based in the Gulf region and Indonesia (Aribi and Gao, 2010; Nugraheni and Anuar, 2014). However, those studies found differences in the CSD practices, not CEDQty.

The establishment of ICM by the Malaysian Government fulfils the principle of *maslahah* (public interest) that is consistent with Islamic accountability when the government, acting as a trustee of God in managing a country, is responsible in providing a capital market that adheres to the *Shari'ah*. This is consistent with Islamic accountability on the role of government for ensuring that the management of a country is based on *Shari'ah* given that the *Constitution Malaysia* prescribes Malaysia as an Islamic country. To be continuously listed on the ICM, companies must ensure that they adhere to the *Shari'ah*. ICM that is governed by SCM monitors this adherence by using a two-stages screening method. SAC that is controlled and regulated by Bank Negara Malaysia exercises this screening on a bi-annual basis by assessing company reports as one of the source documents.

Given that company reports serve as a tool for demonstrating a company's accountability and one of the accountabilities is to the environment, when companies disclose their CED in the company reports, they can have some scores on the two aspects of qualitative screening assessment: a good image based on public perception, and core activities of companies must benefit both the *maslahah* (public interest) of the Muslim community and the country. Failure to pass the screening method results in companies being non-*Shari'ah*-compliant. Companies that want to maintain their status as *Shari'ah*-compliant are pressured by the ICM

and SAC to adhere to Islamic practices based on *Shari'ah*. Thus, when the results of this thesis show that *Shari'ah*-compliant companies provide greater CEDQty of specific items, this implies that the regulative pressures exercised by ICM through SAC are sufficient to cause this type of companies to report some CED item. However, the reporting is merely restricted to three items of CEDQty (A1, A2 and B6) that is very brief in nature. This explains why the *Shari'ah*-compliant status does not influence CEDQ because CEDQ reflects the level of reporting quality of each CED item in the CED index.

The non-influence of *Shari'ah*-compliant status on CEDQ indicates the practices of CEDQ between the *Shari'ah*-compliant and non-*Shari'ah*-compliant companies do not differ. Although this result is similar to Zainal et al.'s (2013) study based in Malaysia, the point of difference is that this thesis focuses on CEDQ while the former study investigates CSD. One particular reason for the low CSD practices among *Shari'ah*-compliant companies in Malaysia was due to insufficient awareness of Islamic values in aspects of accountability and full disclosure (Haji, 2013a; Haji and Ghazali, 2013a; Ousama and Hamid, 2010). This finding highlights a need for continuous improvement in the part of Malaysian regulatory bodies in strengthening their roles in promoting Islamic accountability to address such limited awareness among the *Shari'ah*-compliant companies.

Results also support Islamic accountability in that a Muslim Chairperson or CEO who is entrusted as a caliph should act responsibly in managing the universe including protecting the environment. This argument is based on the belief that Islamic influence is transparent when managers who submit to Islam adhere to *Shari'ah* (a system of norms, ethics and values that are central in facilitating all aspects of human life) (Dusuki, 2008; Maali et al., 2006). Nevertheless, the limited support to the hypothesis suggests that the group of Muslim Chairperson or Muslim CEO possibly have different level of adherence to *Shari'ah*. This shows that instead of having the same understanding on accountability to the environment based on the submission to Islamic religion, an individual (whether in the position of a Chairperson or a CEO) could have different interpretations of general and specific

environmental accountability. This relates to the cultural-cognitive aspect of institutional theory that suggest how the espoused Islamic values have been passed through such leaders (Chairperson and CEO). This could be due to their individual background which includes not only Islam as a religion, but other cultural-cognitive pressures such as culture, education and family background. These different aspects of cultural-cognitive elements could interact with each other and in turn, influencing these leaders to have different understandings and perceptions about environmental accountability in Islam. Accordingly, these conditions influence their differences in decision-making of CED.

The variation in decision-making of CED implies that although the sources of pressure from religion is seen as regulative, it appears that the Islamic values embedded in a Muslim Chairperson and CEO is not too strong to cause them to support or engage companies in performing their environmental accountability unless such leaders have a strong understanding and adherence to *Shari'ah*. These findings complement prior studies that the values of institutional agents have implications for the types of corporate accountability they are likely to champion or participate in (Marcus et al., 2015). Hence, the finding signals that a comprehensive effort from relevant constituents including religious institutions, schools, universities, workplaces and communities, is necessary to ensure a uniform perspective about environmental accountability.

Another explanation for the Muslim CEO to influence more items of CED than the Muslim Chairperson could be due to their position in the company. According to Bernard et al. (2018), CEO is a key decision-maker in the operational aspects of a company since the CEO is involved in a company's daily operation. Thus, it is logical that a CEO is more informed than a Chairperson about the impact of company's activities on the environment. Accordingly, a CEO potentially realise the importance of CED and hence use CED as a way to manage such impact. This aligns with the promotion of transparency and records that shows accountability (Laldin and Furqani, 2013; Yaacob et al., 2015). This finding suggests that the Chairperson and CEO of a company should work together in addressing how the

business activities affect the environment. This finding also points to the needs for the both the Chairperson and CEO be exposed to sustainability issues through training and a way to realise this is by the SCM imposing it as a compulsory requirement.

Complementing the Islamic accountability perspective, findings also consistent with resource-based theory in that both Chairperson and CEO who are responsible for managing the universe are resources to companies. The environment is also a resource to companies. Since resources are interrelated, thus, companies having a Muslim Chairperson or CEO would act responsibly in maintaining the sustainability of the environment, and a way of showing the accountability is by reporting more CED than companies with non-Muslim Chairperson or CEO as indicated in the findings of this thesis.

8.4.2 Corporate Governance

Findings of this thesis offer fresh insights on the influence of Malaysian company's corporate governance characteristics on CED. The findings confirm that corporate governance variables have influenced the CED at overall, dimensional and individual CED items levels. The corporate governance variables tested in this thesis are a female Chairperson, female CEO, government institutional ownership, non-government institutional ownership, board size, board independence and women on boards.

This thesis provides strong evidence of the positive association between the proportion of women on boards and CEDQty (overall, three dimensions, and two items) and CEDQ (overall, five dimensions, and six items). These findings suggest that when companies are having more women on boards, they are likely to have a higher level of CEDQty and CEDQ. These findings add new evidence on the role of women on boards in sustainability reporting, in the context of developing countries such as Malaysia. It shows women of talent contribute to sensible corporate decisions in CED reporting.

Findings of this thesis on the positive influence of women on boards on CED support previous studies in developing countries (Barako and Brown, 2008; Sundarassen et al., 2016) and cross-country studies (Frias-Aceituno et al., 2013; Setó-Pamies, 2015) on sustainability disclosure. However, the point of difference of this thesis with the study by Barako and Brown (2008) is that they studied a sample of Kenyan banks while this thesis used a sample of ESI publicly-listed companies in Malaysia. Although Sundarassen et al. (2016) also used a sample companies in Malaysia, their study examined the impact of women on boards on CSD quantity from 2011 to 2012 while this thesis studied the impact of women on boards on both CEDQty and CEDQ from 2006 to 2014. Thus, findings of this thesis contribute new empirical evidence to the body of knowledge of CED and corporate governance.

The findings about women on boards in this thesis are consistent with a combined normative and cultural-cognitive aspect of institutional theory in that women are different from men, and each group of male or female leadership has its own norm. Thus, they are expected to comply with their group norms. Moreover, due to differences in gender, women and men have differences in their agentic and communal attributes (Eagly and Johannesen-Schmidt, 2001). Women have been found to have stronger communal characteristics of society concern including the environment, as opposed to men (Eagly and Johannesen-Schmidt, 2001). Because of women having greater concern for the environment, women on boards tend to promote this behaviour by encouraging provision of CED.

In complementing institutional theory, findings also support resource-based theory in that the presence of women on boards offers unique resources to companies. When the boards are also represented by women in addition to men, these women directors bring together their networks that are different from the networks of male directors. The networks that the women directors bring arise from their experiences and capabilities through different learning and socialisation processes than men which can also explain the cultural-cognitive aspect of institutional theory. Therefore, when women act as directors, they can help companies in having

environmental concern, and therefore can lead companies in showing their concern by promoting environmental activities and reporting of CED.

This thesis offers evidence of the influence of a Chairperson's gender and CEO's gender on CED. This thesis finds that a female Chairperson differs from a male Chairperson in the opinion regarding CED. Specifically, findings suggest that companies lead by a female Chairperson are likely to have a higher level of CED than those with a male Chairperson. The female Chairperson tends to focus on the dimensions of CEDQty E (stakeholder engagement) and CEDQty F (credibility) and five items of E1 (employee environmental management programs within a company), E2 (community outreach programs), E3 (donation and/or partnership with environmental organisations/external parties in relation to environmental campaigns/practices), F2 (certification of environmental related standards) and F4 (products certification with respect to environmental impact) when reporting for CEDQty. For CEDQ, the focus of the female Chairperson is on the overall CEDQ, dimensions of CEDQ A (environmental governance), CEDQ E (stakeholder engagement) and CEDQ F (credibility) together with seven CEDQ items including those five similar items in CEDQty.

A possible explanation for the similarity in the dimensions and items of CEDQty and CEDQ could be because the female Chairperson's preference in the decision making for CED. A female Chairperson have greater preference in disclosing the dimension E (stakeholder engagement) and F (credibility) than the male Chairperson based on the belief that stakeholders or institutional constituents can exert multiple pressures for CED on companies. Such belief is derived from the reflection of the Chairperson's values and cognitive bases that form the foundation for CED decision making (Lewis et al., 2014). The way that the female Chairperson chooses to exhibit it is by strategically responding to CED through more disclosure of items E1, E2, E3, F2 and F4 than the male Chairperson. By reporting these five items, a female Chairperson can show that her decision for CED has supported the requirement for CED in the Malaysian guidelines (for E1), the international

guidelines (for F2 and F4) and both the international and Malaysian guidelines (for E2 and E3).

In contrast to the findings of a female Chairperson, this thesis finds that a female CEO has a limited positive influence on CED. Findings suggest that for CEDQty, the female CEO had a greater preference to disclose item C2 (operating costs of assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency) than the male CEO. For CEDQ, in addition to having a greater quality of reporting of item C2, the female CEO also disclosed more quality of item B2 (solid waste, and effluent generation and management) than the male CEO. This again suggests that a female CEO differs from a male CEO in their perceptions and responses to CED and that a female CEO has different perceptions and responses for each CEDQty and CEDQ. These differences could be attributed to gender differences of the CEO and the socialisation process that the CEO experienced which support both the normative and cultural-cognitive aspect of institutional theory. This is so because environmental matter involves technical understanding and is associated as a male-dominated matter (Hambrick and Mason, 1984). Thus, the decision made by the female CEO to provide more CED than the male CEO reflect the cognitive understanding and values that she possess pertaining to environment (Hambrick and Mason, 1984; Huang, 2013).

Findings of this thesis are consistent with Manner (2010) and Borghessi et al. (2014). Although the results are similar to both studies, the point of difference is in the dependent variables and sample of studies. This thesis examines the influence of female Chairperson and female CEO on both CEDQty and CEDQ using the sample of Malaysian companies. Meanwhile, Manner (2010) sampled companies listed in multiple CSR rating agencies for discovering the impact of female CEO on CSR performance and Borghessi et al. (2014) sampled US companies to examine the influence of female CEO on CSR and its dimension (community, diversity, employee, environmental, humanitarian, and product). The limited support for the influence of female CEO on both CEDQty and CEDQ seems consistent with the suggestion by Borghessi et al. (2014) that differences in gender is diminishing when

the concern is about environmental activities, but not when companies choose to focus on CSR. This means gender differences (regardless in the position of Chairperson or CEO) may exist only in the situation of CSR (as a whole) where reporting on aspects (e.g., social activities) other than environmental activities are also included. The key differences in reporting environmental activities and social activities lie in the nature of the activities and subjectivity of reporting. The scope of environmental activities is relatively objective and hence its reporting involves less subjectivity. In comparison, the scope of social activities is highly contextual based, thus its reporting is subject to the interpretation of a company's CEO.

Findings of this thesis also suggest that although both Chairperson and CEO could be female, they could have different perceptions and responses to CED. This supports the normative aspect of institutional theory that a Chairperson and CEO serve different roles in a company. A CEO is expected to be well-verse in the operational aspects of a company (Bernard et al., 2018). Meanwhile, the role of the Chairperson is leading the board of directors in board decision-making (Huse, 2005). Each role has its norm, and hence, they are expected to comply with the group norms. However, when making decisions for CED, the female CEOs appear to have less informed knowledge about the impact of business to the environment than the female Chairpersons. This leads the female Chairpersons in making decisions for supporting CED while the female CEOs appear to be less supportive.

The differences in the role gender plays in Chairperson and CEO roles provides supports to resource-based theory that when companies have different or same combination of gender of Chairperson and CEO, this offers unique resources to companies. This in turn reflects how companies are making decisions for CED and how they report for CED. The impact of Chairpersons and CEOs on reporting of CED itself is evidence of the dynamic capabilities that a company has.

Findings of this thesis on the influence of female Chairperson and female CEO and women on boards on CED contribute to new empirical evidence to how gender of Chairperson and CEO, and women on boards would influence the reporting

behaviour of CSD. This is so because while the influence of gender has become prominent recently, studies on the influence of the gender of CEO and/or Chairperson is limited in the context of emerging economies (Borghesi et al., 2014; Rao and Tilt, 2016; Zhang et al., 2013). Given the increasing call for more women on boards, findings of this thesis suggest that as the number of women Chairpersons or directors in Malaysian companies increases, CED also increases. The findings of this thesis are consistent with studies based in Australian companies (Ahmed et al., 2017; Rao et al., 2012). Thus, more research is needed to include gender in future CED research based in developing countries. As evidenced in this thesis, the omission of women as top executives and directors in the study of CED risks results being incomplete.

The findings of this study have implications for the institutional reform of the role of women top executives and directors in Malaysia. Although the current status of women in leadership positions in Malaysia is behind the 30 percent expectation by 2016 (SCM, 2011), these finding help to inform the Malaysian Government that the presence of women as Chairperson and women on boards has had a positive impact on the decision related to sustainability concern, particularly CED. The Malaysian Government should continue to promote talented women to join corporate leaderships team given that women represent more than half the population in Malaysia.

Findings of this thesis provide strong evidence of the positive association between the proportion of non-government institutional ownership and CEDQty (overall, two dimensions, and seven items) and CEDQ (overall, four dimensions, and nine items). There are also support for the positive association between the proportion of government institutional ownership and CEDQty (one dimension and four items) and CEDQ (one dimension and six items). These analyses point to the unique institutional environment in Malaysia in that the institutional ownership can be split into 'government' and 'others'. Findings suggest that each type of institutional ownership has impact on CED, but the impact could be different, depending on the item and dimension of the CED. This supports institutional theory analysis that the

definition of institutional ownership and its impact are related to a country and individual company contextual factor.

Findings on the positive influence of non-government institutional ownership with CED are consistent with prior studies by Iatridis et al. (2013), Cotter and Najah (2012), Jo and Harjoto (2012) and Rao et al. (2012). The point of difference between study of this thesis with that of Iatridis et al. (2013) is that although both sampled Malaysian companies, this thesis uses institutional ownership data between 2006 and 2014, while the institutional ownership data in Iatridis et al. was dated from 2005 to 2011. Moreover, Iatridis et al.'s examined the impact of the total institutional ownership on CEDQ. Similarly, using a sample Malaysian companies, Haniffa and Cooke (2002) also investigated the impact of the whole institutional ownership on voluntary disclosure, to find no relationship of both variables. In this thesis, the institutional ownerships are splitted into government institutional ownership and non-government institutional ownership and findings show that both have positive effect on CEDQty and CEDQ. Findings of this study offer original contribution in that previous research in Malaysia has not studied the impact of non-government institutional ownership on CED (e.g. Amran, Lee, et al., 2014; Hamid et al., 2015).

Meanwhile, findings on the positive influence of government institutional ownership on CED are consistent with some studies (Amran and Devi, 2008; Ghazali, 2007; Haji, 2013a, 2013b; Othman et al., 2011; Said et al., 2009) and at the same time inconsistent with other studies (Amran and Haniffa, 2011; Ghazali and Weetman, 2006; Haji and Ghazali, 2013a) based in Malaysia. Findings of this thesis add new empirical evidence on the positive influence of government institutional ownership on CED in Malaysia based on the result of CEDQty and CEDQ dimensions and items. Further, although findings of this thesis support previous studies such as Amran and Devi (2008) and Haji (2013b), the point of different is that this thesis finds government institutional ownership positively influence CED for overall reporting years. However, Haji (2013b) found government institutional ownership increased CSD in 2006 but not 2009, while

Amran and Devi (2008) discovered as government institutional ownership increases, CSD in 2002/2003 also increases.

The findings about non-government institutional ownership and government institutional ownership in this thesis are consistent with the regulative and normative aspect of institutional theory. This means that the regulative pressures exerted by Minority Shareholder Watchdog Group (MSWG) and SCM who monitor overall institutional ownership and Public Accounts Committee (PAC) who monitors government institutional ownership are sufficient to cause companies to increase CED. This shows that the pressures exerted by MSWG and SCM through the Principle 5 of Malaysian Code of Institutional Investors are successful in encouraging both institutional owners to increase their awareness on their roles related to sustainability assessments. However, the coercive pressures exerted by PAC seems to be less effective for CED given that the government institutional investors positively influence certain dimensions and items of CED, and not overall CED. This could probably due to the focus of the PAC is on transparency of the overall reporting rather than specifically on CED reporting. Although PAC may have considered the requirement of *Silver Book* for GLCs to report CSD (see detailed in Section 4.3.2.4), this requirement does not give specific focus to CED, but represents the overall CSD.

Findings of this thesis reveal that each type of institutional investors are important in influencing CED, however the magnitude of influence in each type of institutional ownership is different. The differences in the magnitude of influence of each type of institutional investors has could be attributed to differences in its individual characteristics (How et al., 2014). This differing responses at the level of overall, dimension and items of CED provides support to both the normative aspect of institutional theory and resource-based theory in that each group has it norms and the impact each group has on CEDQty and CEDQ is an evidence of the dynamic capabilities that a company has.

An important implication emerge from these findings is it helps to inform the Malaysian Government that the pressures exerted by MSWG and SCM through the Principle 5 of Malaysian Code of Institutional Investors have had a positive impact on the awareness regarding the roles of institutional investors in sustainability assessments. Thus, the Malaysian Government through MSWG and SCM should continue to encourage institutional investors (both non-government and government) to advance their roles regarding sustainability undertakings by requiring companies to report CED because it is believed that institutional investors could improve good governance of CED among publicly-listed companies. The Malaysian Government also should further strengthen the roles of PAC by requiring PAC to audit how companies with government institutional ownership are practicing CED and how such companies transparently disclose CED in their company reports in supporting the Malaysian Government's effort regarding climate change.

Consistent with the hypotheses, findings of this thesis show that board size has mixed influenced on CEDQty and CEDQ, depending on the dimensions and items of CED. On the one hand, larger board size is likely to increase the reporting of dimension F (credibility) of each CEDQty and CEDQ. This suggests that when board exceeds the average number of eight members, companies tend to not only report, but also provide extensive disclosure of 'credibility' dimension. This finding is consistent with Arena et al. (2015) and Giannarakis (2014a) who found larger board size enhances overall CSD and CED. Although consistent with prior studies, the point of difference is that findings of this thesis evidenced the positive relationship of board size with 'credibility' dimension of CED only and not the overall CED.

The 'credibility' dimension consists of items that can provide reasonable assurance to the CED information being disclosed. By increasing the 'credibility' dimension of CED, companies with larger board size is actually responding to institutional pressures for CED. This is so because there is criticism over the reliability and transparency of CED information among constituents in the organisational field of

CED (Liao et al., 2018). Therefore, this provides support to institutional theory that when institutional constituents exerted pressures for credible CED information, companies with larger board size interpreted and responded to such pressures by reporting more of the ‘credibility’ dimension. Their responses is more significant than companies with smaller board size because when the board size is large, companies would have more board expertise due to diversity of the board. Because the issue of CED is evolving, the diversity of board member’s expertise and experience is useful for companies in interpreting and responding to institutional pressures for CED, in particular pertaining to its reliability and transparency. By having larger board size, companies would be able to make informed and valuable decisions concerning the ‘credibility’ dimension. The argument that larger board size offers more board expertise to enable decision-making concerning CED is also consistent with resource-based theory.

On the other hand, findings of this thesis also show that companies with larger board size are likely to decrease the quality reporting of CEDQ E (stakeholder engagement) dimension. The decreases also involve items of B8 (land remediation, contamination or degradation) and E4 (engagement in supply chains in relation to products/services produced/offered) for each CEDQty and CEDQ, together with items C1 (investment in assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency) and E2 (community outreach program) of CEDQ. These findings are consistent with previous studies that found negative association between board size and both sustainability performance and disclosures (Hussain et al., 2018; Prado-Lorenzo and Garcia-Sanchez, 2010).

One possible explanation for the decrease in CED of specific dimension and items could be because although the size of the board is large, the same board members may not have sufficient experience and expertise related to those dimension and items. This situation leads them to have different perception and interpretation, thus there is less reporting. Alternatively, it could also be due to the board members perceive that those dimension and items are not important in responding to institutional constituents pressure for CED, and hence less reporting. This means

findings also confirm that larger board size can decrease the reporting for CED which consistent with institutional theory that responses for CED are subject to the interpretation of individual company-characteristics. This also supports resource-based theory that larger board size does not mean the board is effective in encouraging CED. These findings are important to verify that board size can influence the level of CED reported by the Malaysian companies.

This thesis also provides evidence that independent directors on boards have mixed influence on CED. Particularly, companies with a higher proportion of independent directors are likely to report lower: CEDQty E (stakeholder engagement) dimension, and items of CEDQty E3 (donation and/or partnership with environmental organisations/external parties in relation to environmental campaigns/practices), CEDQ B8 (land remediation, contamination or degradation) and CEDQ C2 (operating costs of assets; and/or R&D; and/or innovations to enhance environmental performance and/or efficiency). At the same time, such companies with a higher proportion of independent directors are likely to report higher both CEDQty A2 and CEDQ A2 item (a statement about a company's environmental management system).

Findings of this thesis on the negative association of independent directors and CED are consistent with past studies (Brammer and Pavelin, 2008; Esa and Ghazali, 2012). The similarity of this thesis with Esa and Ghazali (2012) is both sampled Malaysian companies. However, while this thesis examines Malaysian companies in three ESI spanning from 2006 to 2014 to find the negative association of independent directors on the dimension and items of CED, Esa and Ghazali (2012) investigated 27 GLCs for 2005 and 2007 to find the negative association of independent directors on overall CSD. Meanwhile, the positive association of independent directors and CED is also consistent with other studies (Muttakin and Subramaniam, 2015; Post et al., 2011). However, this thesis is different from Muttakin and Subramaniam (2015) because the reported positive association of this thesis is based on item of CEDQty and CEDQ, while Muttakin and Subramaniam found a positive association with the overall CSDQty.

A possible explanation for both contradict association that independent directors have on CED could be due to how the independent directors define and interpret the regulative pressures (the Principle 3 2012 MCCG in reinforcing board independence), normative pressures (independent directors professional reputation), and cultural-cognitive pressures (worldwide societal demand) for CED. In one perspective, independent directors are disclosing more of A2 item (a statement about a company's environmental management system) because they possibly perceive that this item reflects their advisory roles regarding CED. In this vein, they are using their judgement in matters pertaining to the society's interest which may resulted from the pressures of professional reputation of independent directors and the Principle 3 2012 MCCG in reinforcing board independence. On the other perspective, the same independent directors are disclosing less of dimension E (stakeholder engagement), CEDQty E3, CEDQ B8 and CEDQ C2 potentially because they lack experience, knowledge and sustainable concern on how such dimension and items are connected to business activities. Hence, there is significantly low reporting of 'stakeholder engagement' dimension and those three items. These arguments are consistent with both institutional and resource-based theory. An important implication from these findings is it is worth for the regulators, especially BM and SCM to revisit the implementation of Principle 3 2012 MCCG and the competency of independent directors in supporting the practices of CED.

8.4.3 Financial Performance

Findings of this thesis suggest that profitability and leverage have mixed effects on CED. Neither profitability nor leverage is found to have any influence on CEDQty. In terms of CEDQ, profitability is found to be positively related to the CEDQ, whereas leverage is found to be negatively related to CEDQ. These findings suggest that although profitability and leverage did not affect the quantity of CED, they did have influence on the quality of CED. This indicates that both profitability and leverage could either have influence or no influence on the reporting behaviour, depending on the extent of the reporting (CEDQty or CEDQ).

The finding that profitability has no influence on CEDQty is consistent with prior study based in Malaysia (Haji and Ghazali, 2013a) and other countries (Aerts and Cormier, 2009; Ben-Amar et al., 2017). Similarly, the finding that profitability has positive influence on CEDQ is also consistent with other studies based in Malaysia (Haniffa and Cooke, 2002; Sundarassen et al., 2016) and other countries (Khlif, Hussainey, et al., 2015; Muttakin and Subramaniam, 2015; Setó-Pamies, 2015).

The positive influence of profitability on CEDQ supports institutional theory by which the interaction between the Malaysian companies and institutional constituents has led to institutional pressures for CED when the institutional constituents expect the Malaysian companies to allocate some of their profits for promoting sustainable activities. In their strategic response to these institutional pressures, the profitable Malaysian companies increased their quality reporting of CEDQ, particularly because their engagement in environmental activities with stakeholders (CEDQ E). Such activities were mainly related to item E3 (donation and/or partnership with environmental organisations/external parties in relation to environmental campaigns/practices). Hence, when companies prepared their CED, they can provide a high quality reporting, rather than a brief statement of CED. The disclosure of this item is consistent with reporting trend for CED (e.g. KPMG, 2015) and exemplify the strategic response of inform strategy that profitable companies employ (Herremans et al., 2016).

Complementing the institutional theory, the finding of the positive influence of profitability on CEDQ is also consistent with resource-based theory. Since companies interact with constituents one of which is customers, this interaction would give rise to resources in the form of profitable business activities. When companies are profitable, they can afford environmental activities and hence better quality in CED. Accordingly, by increasing the quality of CED, companies can signal to institutional constituents how they use their profit in supporting corporate citizenship. In turn, this would increase future sales and ultimately future profits. When the practice of sustainable activities and reporting of CED become a company culture, the company is creating another resource, which is the reporting practice of

CED. This would help a company in building competitive advantage which eventually would enhance its economic performance and stability over time.

For leverage, the finding that leverage has no influence on the quantity of CED is consistent with the prior studies (e.g. Clarkson, Overell, et al., 2011; Elijido-Ten, 2004). The similarity of this thesis with both studies is in proxy of leverage that is based on the ratio of total debts to total assets, however this thesis considers such ratio as alternative measure of leverage. A possible explanation for no relationship between leverage and CEDQty is that institutional constituents from creditors institutions may consider providing CED in the form of presence or absence is unnecessary. Hence, there is no institutional pressures on companies to provide CED to creditors institution.

However, when it comes to CEDQ, the finding of this thesis suggests that leverage has negative influence on the quality of CED. This is consistent with the study by Sulaiman et al. (2014) in Malaysia, Cormier et al. (2011) in Canada, and Brammer and Pavelin (2006a) in the UK. However, this finding is inconsistent with Clarkson et al. (2008) who discovered that highly-leveraged companies are likely to disclose more CED due to stringent monitoring by debtholders. It is interesting to note the similar results of a negative relationship between leverage and CEDQ is found when this thesis employs the same ratio of total long-term debts to total assets as Cormier et al. (2011) to proxy for leverage while Sulaiman et al. (2014) used total debts to total equity, and Brammer and Pavelin (2006a) utilised total debts to total assets.

The negative influence of leverage on CEDQ suggests that highly leveraged companies are likely to disclose less CEDQ. This supports the argument of institutional theory that the way companies perceive and interpret institutional pressures will depend on the contextual environment they inhabit. Between 2006 and 2008, there was an economic downturn due to the Global Financial Crisis. As a result, institutional constituents especially from the banking and creditor institutions were imposing high interest rates on borrowings which lead to the increase in the cost of capital. Companies that have borrowings need to service their

borrowing commitment in the long-term spanning to 2014. Given such a situation, highly leverage companies are likely to experience intense pressures from banking and creditor institutions. Therefore, they would respond to institutional pressures by prioritising their borrowing commitment more than environmental commitment because default payment will put the companies at risk, and this will impact their survival. Accordingly, highly leveraged companies tend to report low CEDQ because of limited fund for engaging in sustainable activities and making CED.

The limited fund availability for CED provides support to resource-based theory because when companies are highly leverage, companies are likely to forego or reduce other resources. In this case, although debts provide resources to companies, they come with obligations to serve the debts. At the same time, companies have other obligations including to the society such as CED. When there are competing obligations, but the funds are limited, companies need to weight the merit, and hence normally choose to satisfy the debts first over CED, resulting in low CED.

8.4.4 Control Variables

This thesis included two control variables, namely company size and industry sector. Both variables are commonly used as control variables for testing a causal effect in the existing literature (e.g. Aerts and Cormier, 2009; Andrikopoulos and Kriklani, 2013; Cormier et al., 2005). Findings of this thesis confirm that company size and industry sector are significant predictors of CED. Findings suggest that larger companies are likely to disclose more CEDQty and CEDQ. These findings are consistent with prior studies that examine the impact of company size on CSD or CED (e.g. Andrikopoulos and Kriklani, 2013; Brammer and Pavelin, 2006a; Haniffa and Cooke, 2005; Liu and Anbumozhi, 2009; Sun et al., 2010).

Findings provide support to institutional theory that larger companies tend to face more intense institutional pressures than smaller companies as the former are more visible. Larger companies interact with multiple constituencies including customers, suppliers, government and financiers and hence their portion of

economic contribution are more than smaller companies. Along with the process of providing CED, companies require resources, and larger companies can afford these resources as measured by total assets, total sales, market capitalisation, and number of employees (Branco and Rodrigues, 2008; Gao et al., 2005; Rupley et al., 2012; Smith et al., 2007). Thus, findings of this thesis are also consistent with resource-based theory that company size explains the resources that a company has. When the company size is larger, a company is able to produce CED, which is also a resource arising from dynamic capabilities of resources owned by a company.

Findings also suggest that industry membership, in particular the ESI (i.e., whether a company is a member of the utility industry, the energy industry or the materials industry) influences both CEDQty and CEDQ differently. Companies in the utilities industry communicate more CEDQty and CEDQ than companies in the energy and materials industries. However, there is no difference in the reporting behaviour of CED between companies in the energy and materials industries. Findings of this thesis are different from the study by Rao et al. (2012) who revealed the utilities industry had lower CED than the materials industry. Nevertheless, Rao et al.'s (2012) finding is similar to this thesis in that both studies found no difference in the CED reporting between the energy and the materials industries. There is possibility that the difference in the industry influence is due to a country contextual factor. While this thesis examines the Malaysian context, the former study investigates the Australian context. It should also be noted that Rao et al. (2012) investigated the relationship of industry sector with CEDQty by measuring the CEDQty as the total number of words dedicated to environmental issues in ARs and the proportion of that words divided by total words in the ARs. Meanwhile, this thesis focuses on measuring both CEDQty and CEDQ in ARs and SRs using a CED index developed based on the combined international and Malaysian guidelines.

Findings of this thesis provide support to institutional theory that industry membership defines and shapes a company's behaviour in the direction of the unique characteristics of that specific industry. Each industry possesses different characteristics of potential growth, competition levels, inherent environmental

impact, the visibility of social and environmental risks, and the degree and type of regulatory intervention (Brammer and Pavelin, 2006a; Cho et al., 2014; Russo-Spena et al., 2018). Thus, how companies respond for CED would depend on the perceived institutional pressures of their industry. The high level of reporting of CED by companies in the utilities industry in this thesis can be explained by the fact that the utilities industry along with the energy industry are included as one of the twelve Malaysian National Key Economic Areas (NKEAs) of the Malaysian Government Economic Transformation Programme (ETP). The key indicator of this NKEAs is that it should contribute to 20% of Malaysian GDP by the year 2020. Due to the visibility of the utilities industry in the NKEAs, companies in this industry face greater scrutiny from the government. Therefore, they need to inform the government by means of CED to maintain the legitimacy of their operation.

The significant difference between the reporting of CED of the utilities industry and the energy industry provides evidence of different strategic responses to institutional pressures of CED from each industry of the sample companies. Despite the materials industry provide less CED than the utilities and energy industries, all the sample companies are ESI, and therefore they may have high levels of CED compared to non-ESI companies. Thus, the results may be more explicit if wider range of industry is included in this thesis.

8.5 Implications of This Study

This thesis is significant to the CED research in terms of theoretical, empirical and practical implications.

8.5.1 Theoretical Implication

The theoretical framework of this thesis draws important insights for the study of CED in a developing country by integrating the international and Malaysian institutional environments in understanding how companies that inhabit a specific

context of a country respond to CED pressures on them. It elevates environmental analysis to three levels: political and economic environment, organisational field, and individual organisation. It depicts the relation of each level by indicating how the Malaysian companies are being pressured for CED through the Malaysian changing political and economic institutional environment. It also shows how these companies interpret different forms of institutional pressures for CED in the organisational field, and accordingly make strategic responses to these pressures. Through this framework, this thesis explains how each company-specific context modifies the relationship between institutional environment factors and responses for CED. This thesis responded to the call for more CED studies based in developing countries context (see, e.g. Belal and Momin, 2009; Hahn and Kuhnen, 2013; Patten, 2015; Tilt, 2018).

This thesis enriches the application of institutional theory by providing a considerable insight into different institutional forces that coevolve together with different forms of disclosure through a quantitative dataset. This answered the call for more research in CED, both addressing different sources of pressures for voluntary and mandatory disclosures, and adding empirical evidence of the same theory in quantitative studies (see, e.g. Hahn and Kuhnen, 2013; Patten, 2015).

This thesis also responded to the call by Hahn and Kuhnen (2013) to use resource-based theory in examining the CED. This thesis considers companies' specific-characteristics as input resources that influence their perceptions and responses to CEDQty and CEDQ. To produce both quantity and quality disclosure of CED, companies need to manage their intra-company and inter-company resources effectively. This thesis shows that the CEDQty and CEDQ can be viewed as output resources and capabilities that are derived from sound management practices. The results of this thesis validate Hahn and Kuhnen's (2013) perspective by showing that the overall CED and its individual content are derived from the effect of a different combination of input resources.

This thesis also offers understanding of Islamic accountability in the framework. The perspective of Islamic accountability in this thesis is different from the perspective of accountability theory in the existing Malaysian CED studies (e.g. Ahmad and Mohamad, 2014; Haji and Ghazali, 2013a) in that it focuses on Islamic accountability and integrates it into institutional theory. Islamic accountability which centres on the accountability to God, embeds accountability to the environment as part of the Islamic teaching. According to this understanding, accountability can be demonstrated through full disclosure, that is proxied by CEDQty and CEDQ, and this accountability is trusted to the *caliph* (represented by leaders with Islamic influence and *Shari'ah*-compliant companies). Thus, accountability to God in Islamic accountability can also be seen as a source of pressures in institutional theory. This pressure can be considered as regulative since submission to God is compulsory. On the other hand, the pressures derive from Islam as a religion can be considered as normative and cultural-cognitive pressures. Thus, this thesis is significant in offering a perspective of Islamic accountability relating to CED in Malaysia in the view that Islam is the formal religion of Malaysia. This thesis also expands the current institutional theory by including the religion as sources of institutional pressures that would introduce a new perspective reflecting human values and behaviour.

Furthermore, the multi-theoretical framework adopted in this thesis differs from the majority of Malaysian studies, which rely heavily on legitimacy and agency theories (often used in studies based in Western studies developed countries) (e.g. Yang et al., 2015) in explaining the pattern and determinants of the extent-based CED in terms of CEDQty and CEDQ (see Section 3.4). The multi-theoretical framework used in this thesis has extended the earlier work of Amran and Devi (2008), Amran and Haniffa (2011), and Hamid et al. (2015). It enables the capture of different events at a particular point in time, and over time in offering understanding of how and why institutions, and the sources of institutional pressures, drive and shape institutional changes. The use of longitudinal data addresses a previously identified limitation of a cross-sectional data concerning causality as highlighted by Brammer and Pavelin (2006a) and thus offers in-depth

analysis of the institutional processes undergone by the same institutions over time rather than only in a single period.

The framework of this thesis also introduces a combination of new variables by including the Islamic influence and gender variables at an individual company level in examining their associations with CEDQty and CEDQ (see Section 4.2). The Islamic influence includes the *Shari'ah*-compliant status, Muslim Chairpersons and Muslim CEOs while the gender variables explore gender differences of the Chairpersons, CEOs and boards of directors. The review of literature has noted that these variables have received scant attention not only in the framework of CEDQty and CEDQ, but also in the application of institutional theory (see Section 3.5). The inclusion of these variables in the framework, therefore, enriches the CED studies in Malaysia and extends the breadth of institutional theory at the political and economic level, and individual organisation level.

8.5.2 Empirical Contribution

Empirically, this thesis offers an innovative approach in the study of CED in the Malaysian context by researching a combination of mechanistic and interpretative CED. The mechanistic CED refers to CEDQty, while the interpretative CED refers to CEDQ. According to Weber (1990), such combination of CED studies are the best approach to investigate the CED practices as they reflect the meaning-oriented (CEDQty) and richness (CEDQ) of disclosures. The application of both approaches in this thesis also responded to the call by Patten (2015).

Moreover, this thesis extends the existing Malaysian CED research by developing a CED research instrument that combines both the international and Malaysian guidelines (including policies and legislation). While some studies have provided limited reference to the Malaysian guidelines (see Appendix 1), this thesis offers a more comprehensive reviews by documenting three Malaysian policies, a set of Malaysian environmental legislations and six Malaysian guidelines (see Table 5-3) in the construction of the CED index. This thesis also integrates these guidelines

with three international environmental reporting guidelines. This combination reveals a fresh position of convergence and divergence of both the international and Malaysian guidelines. These guidelines that were issued between 2002 and 2015 provide a timely opportunity to investigate the changing pattern of not only the CED practices by Malaysian companies in a particular reporting period from 2006 to 2014, but also the changing institutions of these individual companies and the political and economic environment spanning between these periods.

To promote a better understanding of specific institutional contexts, this study provides a fresh profile of the content and reporting medium. The sample analysed is larger (involves longitudinal data analysis for three reporting years: 2006, 2008 and 2014), richer (both ARs and SRs) and more current (data up to 2014) than previous studies in Malaysia.

Although the results reveal a low level of CEDQty and CEDQ, these results also show a slowly progressing state. This indicates that the Malaysian stock exchange regulation is successful in triggering CED and that the on-going interactions between the international and Malaysian institutional environments prompts CED. This helps to provide better insights on the current status of CED practices by Malaysian companies using both mediums and current data, and captures the evolving nature of CED in the Malaysian context.

In addition, the empirical analysis affords an in-depth understanding of the effect of contextual factors of individual companies face in dealing with climate-change issues, specifically in the reporting of both CEDQty and CEDQ. Although the same contextual factors are tested on CEDQty and CEDQ, the results of an association of each variable with CEDQty or CEDQ are not necessarily similar. Despite this, the introduction of Islamic influence in the theoretical framework has broadened the scope by providing results on how the Islamic accountability, that is central to capture the Islamic influence, is viewed as sources of institutional pressures for CED. These results of Islamic influence (*Shari'ah*-compliant status, Muslim CEO and Muslim Chairperson) on CEDQty and CEDQ assist a fuller and more nuanced

understanding of the importance of values espoused in Islamic religion. In particular, values in religion are critically useful in nurturing ethical culture towards the environment and society that can be reflected through the practice of CED.

Furthermore, the results of the association between gender variables of Chairpersons, CEOs and boards of directors provide new insights on the role of gender, as well as, the role of different positions of top management in the decision making of CED. These results addressed the under-researched area in CED as discussed in Borghesi et al. (2014). The empirical findings also validate and provide the fresh association between types of institutional ownership (government institutional ownership and non-government institutional ownership), board size, board independence, financial performance (profitability and leverage), size and industry sectors on CEDQty and CEDQ, based on the condition of institutional changes.

This study contributes to understanding of CED in Malaysia based on recent data and longitudinal study because many previous studies (e.g. Buniamin, 2010; Buniamin et al., 2011; Said et al., 2013) rely on cross-sectional data and such reliance may lead to biased conclusions in the factors affecting CED behaviour.

8.5.3 Practical Implication

Practically, this thesis informs Malaysian regulatory bodies and policy makers on the impact and success of their policies and guidelines. Results of the low levels of CEDQty and CEDQ necessitate the Malaysian regulatory bodies, in particular, BM and Securities Commission of Malaysia (SCM) to provide comprehensive and clear CED guidelines. In these guidelines, the regulators should establish a target in areas such as energy, water, waste, equipment and consumables; and requirement to disclose such targets and detailed progress towards achieving these targets in the CED to encourage more detailed disclosure (Adams et al., 2014). These guidelines should also stress the need for transparency in reporting in upholding the notion of accountability, rather than solely on the legitimate concerns. In doing so, this

requires the collaboration between the regulators and preparers of CED to identify challenges faced by companies and expectations from the regulators. It is hoped that this reconciliation can offer effective guidelines that will assist companies in addressing how and why companies should report their CEDQty and CEDQ.

Results also signal that BM should make CED (and CSR) mandatory to public listed companies and enforce the compliance to the mandatory requirement. First, by setting-up a specific department to enforce and monitor compliance to the CSR reporting so that companies face intensive coercive pressures for reporting CED. The lack of enforcement such as fines and supervision from the respective department may be the reason for non-disclosure or low level of CED by companies. Second, by creating a demand for CSR reports and it can be either disclosed in annual reports or sustainability reports. Some investment analysts may have used CSR as a basis for their investment advice, however when the CSR information is limited, it limits their ability to provide informed investment advice. Thus, the investment analysts should push BM to enforce and monitor compliance to the CSR reporting and at the same time BM should provide more awareness on the importance of CSR to all stakeholders so it creates demand and supply for CSR. Third, by requiring all companies to have CSR (including environment) committee. By having this committee, it is expected that companies can focus in measuring the impact of their business operations to the environment and how they mitigate the associated risks. Hence, this leads them in providing informative disclosure of their environmental activities. This effort can support the requirement of Companies Commission Malaysia (CCM) through the *Malaysian Companies Act 2016* that requires companies to include CSR (or environment) initiatives in their Director's Report. Additionally, at a broader level, the low levels of CEDQty and CEDQ practices in Malaysia highlight that institutional standard-setters may need to consider developing countries context when they revise their guidelines.

Moreover, in supporting the effective roles of Malaysian regulatory bodies including BM, SCM and SAC, the results of this thesis show that some mechanisms introduced by these bodies have no impact on the CEDQty and CEDQ. For

example, the SCM introduced the ICM to provide a capital market in accordance with the *Shari'ah* (see Section 4.3.2.6). To complement this market, the SCM also formed SAC that monitors the application of *Shari'ah*-compliant rules by *Shari'ah*-compliant status. Despite this, the CEDQty and CEDQ practices between the *Shari'ah*-compliant and non-*Shari'ah*-compliant status do not differ and have no impact on CEDQty and CEDQ. This signifies the need for a revised assessment in the *Shari'ah* screening methodology by incorporating accountability to the environment and humanity as criteria for the *Shari'ah*-compliant status. In doing this, this research expects that companies that want to be labelled as *Shari'ah*-compliant status are aware that adherence to *Shari'ah* encompasses a broader scope of accountability, and not just based on their nature of businesses only.

The results also reveal that the Muslim Chairperson and CEOs have mixed influence in the decision-making of CED in Malaysia as shown in the different items that they emphasised. Nevertheless, companies having the group of Muslim Chairpersons and Muslim CEOs will have high CED due to each group will on average have a high level of Islamic values than the group of non-Muslim Chairpersons or non-Muslim CEOs. This indicates the essential elements in strengthening the religious institution as a life-long learning institution so that the ethical culture of people in appreciating the accountability towards the environment and humanity, especially within a company, can be built based on firm and stable ground, rather than just moral reasoning. However, rather than a single effort by religious institutions, the nurturing of ethical values, specifically, espoused Islamic values is a collective effort that begins at home and spreads to schools, universities, workplaces and communities. Thus, this thesis opines that at schools and universities levels, policy makers could review the Malaysian education curricula in educating the youngsters to make ethical decisions and in learning to appreciate the natural environment and society. Similarly, policy makers of accounting professionals could also revise the Malaysian accounting curricula and continuous professional educations that will stimulate adherence to ethical business decisions concerning both the environment and society among accounting professionals. In

fact, incorporating environmentalism as an ethical element in accounting curricula have been highlighted by AICPA (1999) and PwC (2004).

In relation to the roles of corporate governance mechanisms, this thesis finds that gender variables of Chairpersons, CEOs and boards of directors, and non-government institutional ownership have some influence on CEDQty and CEDQ. Meanwhile, government institutional ownership, board size and board independence have limited or no impact on CEDQty and CEDQ. In regard to the roles of women in the top positions of companies, the empirical results show prospects of enhancing their presence in promoting CED. These results also demonstrate that the SCM effort in supporting 30% women on boards is worthy even though it is making slow progress. The positive influence of non-government institutional ownership on CED suggests that CED can be successfully implemented if Malaysian companies have more non-government institutional shareholders. Nevertheless, this suggestion cannot be made at a broad level because there are also other types of reporting that are important to companies. Since there are many factors involved in different types of reporting, thus it is not appropriate to recommend Malaysian companies to have more non-government institutional shareholders in isolation. Concurrently, the non-significance or limited results of other corporate governance variables signal a timely opportunity for the SCM in assessing the effectiveness of its revised *2012 MCCG* (Malaysian Code of Corporate Governance) in relation to CED. Furthermore, this signifies the importance of continuous training to Chairpersons, CEOs, and boards of directors in understanding the *MCCG* and sustainability issues. By attending such training, these top management within companies can have improved perceptions about institutional requirements and changes. Therefore, they can more readily align the institutional expectations with how companies should respond in the reporting of CEDQty and CEDQ.

Taken as a whole, the aforementioned discussion highlights the significant contribution of this thesis in the way findings could be of use to companies, shareholders, government and regulators, other stakeholders and the public.

8.6 Limitations and Suggestions for Future Research

Although findings of this thesis have provided fresh insights into the study of CED, like many previous studies, this thesis has several limitations which present opportunities for future research. First, this thesis concentrates only on a sample of three environmentally-sensitive industries (ESI). Since the sample is very selective, the results from these industries should be read with caution as they may not represent the CED practices of the overall ESI within the Malaysian context. Future studies would benefit from this thesis by improving the number of ESI that provide both CEDQty and CEDQ. Future studies could also include all industries by following the international industry classification as employed in this thesis, rather than using the industry classification based on BM as found in the majority of Malaysian CED studies. This is important to enable a comparison of overall Malaysian CED practices with the international practices in the ESI. In addition, a wider scope of research could be extended by providing a comparison of CEDQty and CEDQ practices between ESI and non-ESI industries in Malaysia, as well as a comparison of CEDQty and CEDQ practices between Malaysian companies and other companies in the context of ASEAN (The Association of Southeast Asian Nations) region.

Second, this thesis fills the gap in the Malaysian CED based research by focusing on longitudinal data that covers the study period between 2006 and 2014. While this is consistent with the argument in institutional theory that the changing institutional environment in Malaysia influences disclosure behaviour, this thesis has not covered the period starting 2015. In the year 2015 to 2018, the Malaysian institutional environment of CED has evolved when BM had updated its *2006 BM MM Listing Requirements* in 2015 and made twice revision of *Sustainability Reporting Guidelines*, which was previously known as the *2006 BM CSR Framework*, in 2015 and 2018. The CCM also had made changes to the *Malaysian Companies Act 1965* by replacing it with the *Malaysian Companies Act 2016* that made an inclusion of CSR (or environmental) initiatives in a business review of the

Directors' Report. However, the period starting 2015 is beyond the scope of this thesis. Future studies can incorporate more current data and extend the longitudinal data of this thesis that will enrich the CED studies based in Malaysia.

Third, the panel data analysis of this thesis examines the association between key company-specific characteristics of Islamic influence, corporate governance, financial performance and control variables of industry and company size, and CED. While this thesis focuses on the influence of female Chairperson and CEO on CED, it is observed that male Chairpersons and CEOs have some influence on CED, but the effect appears contradictory to the theoretical position of this thesis and thus deserves further exploration in future studies. Moreover, while there are other company-specific characteristics (such as company age, listing status, international operations, media exposure, different types of ownership structure) that may influence CED, but that are not accounted for in this thesis, this thesis has supplemented eight alternative variables to confirm the robustness of the main analysis. Future studies exploring different company-specific characteristics and measurement of such company-specific characteristics will enhance the explanatory power of the CEDQty and CEDQ models, especially involving panel data analysis. Future studies could also assess the moderating effect of company-specific characteristics in improving the CEDQty and CEDQ practices. While the practice of CED requires resources and helps companies to develop capabilities in managing the CED practices, companies would benefit from such practice over time through the building of competitive advantage. It would be an interesting avenue for future research if future works could explore how competitive advantage is added value by the CEDQty and CEDQ practices.

Fourth, despite rigorous development of the CED index, the construction of CED index and measurement of CED are not fully free from bias. The used of a self-constructed index of this thesis is sourced from the international guidelines, and Malaysian policies, legislations and guidelines to represent the context of changing institutional environments on CED. While this CED index is deemed comprehensive to capture the Malaysian context of CED for the purposes of the

current study, it may be subject to further improvement due to the latest Malaysian pronouncements related to CED. Future research could use the comprehensive CED index developed in this study as an initial step in enhancing further understanding of how the Malaysian institutional environment evolves in responding to the changing international institutional environment on CED. A further concern is about the linearity of the scale used for measuring CEDQ index. Assuming the scale is linear, it raises a question whether each scale represents the same degree of change in quality of CED. To confirm the validity and reliability of the CED index, this thesis measured both the quantity and quality of CED, and engaged two additional coders to do the inter-coder reliability (see Section 5.4). While the scale for measuring CEDQ is valid, other scales that could be used for future research include adequacy, comprehensiveness, informativeness, timeliness, understandability, readability, reliability, relevance, and comparability; or CEDQ could use semantic assessment. Future studies could replicate the validated scale for CEDQ in studying the quality of other types of voluntary disclosures and examine their variations. Future studies could also assess the three levels of CED: overall score, total score by dimension, and score by item, as evidenced in this thesis as a basis in examining different levels of disclosure in a single study.

Fifth, this thesis focuses on the CED reporting via annual and sustainability reports. The scores of CEDQty and CEDQ may be biased if instead of using these medium, the company may have used different public reporting channels such as website disclosures. Although this thesis also includes some web disclosures to provide initial understanding of this medium of disclosure for CED, the examination of web disclosures was limited to ten sample companies, selected at random. Future studies could include other types of reporting medium, for example, annual reports, sustainability reports and web disclosures in a single study to reflect the broad medium of CED. Furthermore, future studies could extend the work of this thesis by doing comparative studies between the use of different reporting channels in the context of the ASEAN region.

Finally, this thesis employs quantitative methodology to provide empirical evidence of the theoretical argument. The model used in this thesis could be further enhanced by integrating qualitative investigation, using interviews and surveys, to investigate how institutional changes influences company-specific characteristics, and how these factors moderate each other in changing the perception of companies and the internal-decision making processes. These suggestions can provide further insights into the study of CED and might improve the understanding of future studies.

Despite these limitations, this thesis improves understanding on both the CEDQty and CEDQ practices in the Malaysian context based on the evolving nature of institutions and the CED issue. Moreover, this thesis offers further explanation of factors contributing to these practices. This thesis deems that the framework that provides a foundation for this study remains valid for the evolving nature of CED and in a bigger sample.

8.7 Concluding Remarks

This thesis has addressed three research objectives and ten research questions outlined in Chapter 1 by placing the discussions, implications and limitations (this chapter) of the findings (Chapter 6 and 7) in light of the conceptual framework (Chapter 4) and existing literature review of CED (Chapter 2 and 3). To operationalise the conceptual framework, this thesis has developed the methodology as presented in Chapter 5.

Theoretically and empirically, this thesis advances previous CED research by addressing the under-researched corporate environmental reporting behaviour in developing countries. The empirical findings discover the patterns of CED and factors that explain significant differences and similarities in the reporting of CED (in the form of CEDQty and CEDQ) by the 135 Malaysian publicly-listed ESI companies across three reporting years (2006, 2008 and 2014). The overall findings reinforce this thesis's general argument that a country context and the changing institutional environment of CED plays an important role in determining how

individual companies (company-specific characteristics or company's resources) inhabiting a country perceive and interpret institutional pressures for CED and in turn make strategic responses to these pressures. The aspects of institutional pressures for CED evidenced in this thesis are coercive pressures (e.g., BM, SCM), normative pressures (e.g., religious beliefs, professional accounting bodies), and cultural-cognitive pressures (e.g., industry membership, religious beliefs).

In addition to the relevance of an institutional theory perspective to CED study in Malaysia, this thesis supports the suitability of resource-based theory and Islamic accountability perspectives. In resource-based theory, company-specific characteristics and the CED practices are serving as both resources and capabilities, which would benefit companies over time through an outcome of competitive advantage. Thus, through learning and experience, that takes place over time, of the resources and capabilities, companies can use it to achieve competitive advantage. In the Islamic accountability perspective, the accountability of protecting the environment and community lies to all human beings. Thus, in the case of a company, the accountability lies with the agents of companies (such as Chairperson, CEO) who has power to influence the decision for CED.

The thesis contributes to the literature by offering a rigorous CED instrument that is developed based on comprehensive reviews of three Malaysian policies, a set of Malaysian environmental legislations and six Malaysian guidelines together with international guidelines. This extends the existing Malaysian CED research. This thesis also provides a larger, richer and more recent sample of Malaysian companies by engaging in a longitudinal data analysis involving the data for 135 companies for each year 2006, 2008 and 2014 based on annual reports and sustainability reports. Such research investigating larger, richer and more recent data of Malaysian companies is still relatively limited.

The main contribution of this thesis is its being the first study, to the best of researcher's knowledge, to empirically evidence the significant effect of Islamic influence from the perspectives of Muslim Chairperson and Muslim CEO on both

CEDQty and CEDQ practices. Thus far, while most studies have used *Shari'ah*-compliant status as a proxy for assessing Islamic influence, none of the studies in CED research are examining the Islamic influence from these perspectives. This thesis introduces to the CED literature that the Islamic influence of each the Muslim Chairperson and Muslim CEO, in addition to the *Shari'ah*-compliant status are also important variables in determining both the CEDQty and CEDQ practices. The implications from these findings are on the importance of strengthening the roles of not only religious institutions, but also family, education, workplace and community institutions in nurturing ethical values of accountability to the environment and human beings. In recognising such role, the Malaysian Government's step in making solid waste separation at home as compulsory effective from 1 September 2015, although by stages throughout Malaysia, indicates a good move in educating the community of ethical values in appreciating the accountability to the environment and human beings. Given that the sustainable environment is a topical issue due to further degradation of the environment, more initiatives in promoting the preservation of the environment from any relevant parties should be further welcomed to increase the level of awareness and responsiveness for the environment among the whole Malaysian community.

Findings of this thesis also contribute to the body of knowledge by providing evidence of the positive influence of women on boards on CEDQty and CEDQ and the positive influence of female Chairperson has on CEDQ. These findings highlight the importance of women directors in influencing decisions for CED, especially for a developing country such as Malaysia where the presence of women as Chairperson and the percentage of women on boards are still relatively small. Thus, these validate that the initiative of Malaysian Government in encouraging more women participation on boards is worthy effort and these effort should be continued further given that the World Bank reported Malaysian company has only 13.8 percent women on boards which is below the global average of 15 percent.

In addition, findings regarding the positive influence of non-government institutional investors have on CED contributes to the knowledge given that

empirical research in Malaysia either studies the influence of the whole institutional investors or government institutional investors. This has implication in the sense that the Malaysian Government can use the non-government institutional investors as its agent in promoting a good governance of environmental practices.

Accordingly, the study has the potential of attracting the attention of those concerned about CED and who may be interested in using the findings to inform any future endeavour related to CED in Malaysia, or other developing countries, by taking into consideration factors that influence CED practices. Findings of this thesis support the relevance of using a combination of institutional theory, resource-based theory and Islamic accountability perspective in explaining the variation of CED practices.

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Appendices

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Sundarassen et al. (2016)	450 listed companies in 14 industries on Bursa Malaysia	2011 and 2012 annual reports	Agency theory Resource-based theory	CSDQty (Index: 4 dimensions, 28 items) (Scoring rule: 0=absence; 1=presence)	Board independence, women on boards, profitability and company size are significant determinants of CSDQty.
Hamid et al. (2015)	164 listed companies in 8 ESI on Bursa Malaysia, a same sample as in Sulaiman et al. (2014)	2005 and 2009 annual reports	Institutional theory Legitimacy theory	CEDQ (Index and scoring scale: similar to Sulaiman et al. (2014))	A descriptive study that shows CEDQ 2009 improves than CEDQ 2005 as a consequence of Bursa Malaysia listing requirements in 2007.
Ahmad and Mohamad (2014)	49 listed construction companies on Bursa Malaysia	2009 annual reports	Accountability theory	CEDQty (volume-based sentence) CEDQ (Index: 8 dimensions, 48 items similar to Clarkson et al. (2008) and Green Building Index) (Scoring scale: for other than environmental performance 0=absence, 1=presence; for environmental performance 0 to 6)	A descriptive study that shows companies failed to disclose a complete and comprehensive CED.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Sulaiman et al. (2014)	164 listed companies in 8 ESI (industrial products, consumer products, plantation, property, trading/services, construction, mining, and infrastructure) on Bursa Malaysia	2009 annual reports	Legitimacy theory Resource-based theory Information cost theory	CEDQ (Index: 9 dimensions, 46 items) in reference to ACCA MaSRA Awards, Cormier and Gordon (2001) and Wiseman (1982) (Scoring rule: 0=absence; 1=general disclosure; 2=detailed disclosure; 3=quantitative, non-monetary disclosure; 4=quantitative, monetary disclosure)	Company size and leverage are significant determinants of CED.
Ahmad and Haraf (2013)	30 listed construction companies on Bursa Malaysia	2004 to 2006 annual reports	Legitimacy theory	CEDQty (volume-based sentences) CEDQ (Index and scoring rule:similar to Clarkson et al. (2008))	A descriptive study that shows CEDQty and CEDQ were very low and did not increase for different reporting year.Soft disclosure dominates CED than hard disclosures.
Haji (2013a)	76 <i>Shari'ah</i> -compliant listed companieson Bursa Malaysia (plantation/mining, property, consumer products, industrial products, construction, trading/services, technology)	2006 and 2009 annual reports	Legitimacy theory	CSDQty (Index: 23 items) (Scoring rule: 0=absence; 1=presence) CSDQ (Index: 23 items) (Scoring Rule: 0=absence; 1=qualitative or brief disclosure; 2=quantitative or monetary disclosure; 3=qualitative and quantitative disclosure)	CSD improves after the implementation of BM CSR Framework, revised MCCG, global financial crisis and the Prime Minister's CSR Award. Company size, government institutional ownership, board size, family members on board, profitability are significant determinants of CSD.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Haji (2013b)	85 listed companies on Bursa Malaysia (plantation, mining consumer products, industrial products, construction, trading/services, technology)	2006 and 2009 annual reports	Legitimacy theory Agency theory	CSDQty (Index and scoring rule: similar to Haji (2013a)) CSDQ (Index and scoring rule: similar to Haji (2013a))	CSD improves after the implementation of BM CSR Framework, revised MCCG, global financial crisis and the Prime Minister's CSR Award. Company size, director ownership, government institutional ownership, board size are significant determinants of CSD.
Haji and Ghazali (2013a)	76 <i>Shari'ah</i> -compliant listed companies on Bursa Malaysia (similar to Haji, (2013a))	2009 annual reports	Accountability Legitimacy theory Agency theory	Corporate voluntary disclosure quality (Index: 3 dimensions, 48 items similar to Ghazali and Weetman (2006)) Corporate voluntary disclosure quality (Scoring rule: similar to Haji (2013a))	Company size, board size, leverage are significant determinants of voluntary disclosure.
Iatridis (2013)	529 listed companies on Bursa Malaysia (beverages, chemicals, food producers, forestry and paper, industrial metals and mining)	2005 to 2011 annual reports and websites	Agency theory	CEDQ (Index: similar to Clarkson et al. (2008)) (Scoring scale: similar to Clarkson et al. (2008))	Company size, industry, need for capital, stock markets, environmental performance, profitability, capital spending, company visibility are significant determinants of CED.
Said et al. (2013)	120 listed companies on Bursa Malaysia (industrial product, consumer product, trading/services, plantation, construction, technology)	2009 annual reports	Agency theory	CEDQty (Index: 11 dimensions, 58 items) (Scoring scale: 0=absence, 1=presence)	Chairperson independence, Chairperson age, CEO with law background, industry are significant determinants of CED.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Zainal et al. (2013)	180 top listed companies on Bursa Malaysia	2005 to 2009	Not specified	CSDQty (Index: 5 dimensions, 40 items) (Scoring scale: 0=absence, 1=presence) CSDQ (Scoring scale: similar to Wiseman (1982))	A descriptive study that shows no statistical difference between the practices of <i>Shari'ah</i> -compliant and <i>Shari'ah</i> non-compliant companies. Implementation of BM CSR Framework has no impact of the CSD except for community disclosure.
Arshad et al. (2012)	17 Islamic banks in Malaysia	2008 to 2010 annual reports	Stakeholder theory Resource-based theory	Islamic CSDQty (Index: 8 dimensions) (Scoring rule: 0=absence, 1=presence)	Islamic CSD as significance factor to profitability, and company reputation
Esa and Ghazali (2012)	27 government-linked companies listed on Bursa Malaysia	2005 and 2007 annual reports	Not specified	CSDQty (Index: similar to Ghazali (2007)) (Scoring rule: 0=absence; 1=presence)	CSD improves after the introduction of Silver Book for GLCs in 2006. Board size, board independence, leverage are significant determinants of CSD.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Mokhtar and Sulaiman (2012)	47 government-linked companies listed on Bursa Malaysia (ESI: construction, industrial products, property, mining, plantation; non-ESI: other than ESI)	2006 annual reports	Legitimacy theory	<p>CEDQty (Index: 4 dimensions, 21 items similar to Gray et al. (1995b) and Hackston and Milne (1996) (Scoring rule: volume-based sentence; declarative, non-monetary, monetary; neutral, bad news, good news; environmental audit, environmental policy; Chairperson report, mission statement, directors' report, operations review, others)</p> <p>CEDQ (Index: 2 dimensions, 70 items, based on ACCA environmental reporting award criteria) (Scoring rule: 0=absence, 1=presence)</p>	<p>A descriptive study that shows government-linked companies provide declarative CED.</p> <p>CEDQ is indifferent neither between government-linked companies and non-government linked companies, nor between ESI and non-ESI companies.</p>
Amran and Haniffa (2011)	201 listed companies on Bursa Malaysia (industrial products, consumer products, construction and infrastructure, trading and technology, property and hotel, finance, and plantation and mining)	Year of annual reports not specified	Institutional theory	CSDQty (Index: similar to Hackston and Milne (1996) (Scoring rule: 0=absence, 1=presence)	Company size, industry, government dependent, award, CSR goal are significant determinants of CSD.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Buniamin et al. (2011)	243 listed companies on Bursa Malaysia (industrial products, consumer products, trading/services, properties, construction, plantation, technology, infrastructure, hotel, trusts)	2005 annual reports	Agency theory	CEDQty (volume-based sentence) CEDQty (Index: based on ACCA Mesra criteria and National Annual Corporate Report Awards on Environmental Reporting criteria) (Scoring rule: 0=absence, 1=presence) CEDQ (Scoring rule: not properly explained)	Company size, industry, board size, director ownership are significant determinants of CED.
Othman et al. (2011)	117 listed companies on Bursa Malaysia (ESI: industrial products, property, plantation)	2006 and 2007 annual reports	Institutional theory	CSDQty (percentage of changes in volume-based words between 2006 and 2007)	CSDQty, government institutional ownership, family ownership and profitability are significant determinants of CSR reputation.
Rahman et al. (2011)	44 government-linked companies listed on Bursa Malaysia	2005 to 2006 annual reports	Not specified	CSDQty (Index: 4 dimensions, 16 items) (Scoring rule: volume-based sentence)	Company size is a significant determinant of CSD.
Buniamin (2010)	243 listed companies on Bursa Malaysia (ESI: construction, plantation, industrial products, consumer products, trading/services, properties, infrastructure project companies,; non-ESI: technology, hotel, trust)	2005 annual reports	Legitimacy theory	CEDQty (volume-based sentence) CEDQ (Index: 14 dimensions, 94 items) (Scoring rule: 0=absence, 1=presence)	Company size and industry are significant determinants of CED.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Othman and Ameer (2010)	60 listed palm oil companies on Bursa Malaysia	2007 annual reports	Not specified	CEDQty (Index: 4 items with different weight- environmental policy 10%, measurement system 40%, target setting for improvement 20%, impact on biodiversity 30%) (Scoring rule: 0=absence; 1=presence)	A descriptive study that shows a limited CED in the annual report.
Othman and Thani (2010)	56 <i>Shari'ah</i> listed companies on Bursa Malaysia	2004 to 2006 annual reports	Not specified	CSDQty (Index: 6 dimensions, 43 items) (Scoring rule: 0=absence, 1=presence)	A descriptive study that shows the CED dimension is at low level although there was improvement in the level of disclosure.
Saleh et al. (2010)	200 largest publicly-listed companies on Bursa Malaysia	2000 to 2005 annual reports	Stakeholder theory	CSDQty (volume-based sentence) CSDQ (Index: 4 dimensions, 20 items) (Scoring rule: 0=absence, 1=brief qualitative, 2=specific qualitative, 3=quantitative)	Institutional ownership is a significant determinant of CSD.
Elijido-Ten (2009b)	79 publicly-listed companies on Bursa Malaysia	2000 and 2001 annual reports	Stakeholder theory	CEDQty (volume-based sentences) CEDQ (Index: 4 dimensions, 19 items) (Scoring rule: similar to Al-Tuwaijri et al. (2004), Hughes et al. (2001), Wiseman (1982))	Government power, strategic posture, CSR committee are significant determinants of CED.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Said et al. (2009)	150 non-financial companies listed on Bursa Malaysia (industrial product, consumer product, trading/services, plantation, property, construction, other sectors)	2006 annual reports and websites	Agency theory	CSDQty (Index: 5 items) (Scoring rule: 0=absence; 1=presence)	Government institutional ownership, ownership concentration, board size, and audit committee are significant determinants of CSD.
Yusoff and Lehman (2009)	50 top listed companies each on the Bursa Malaysia and the Australian Stock Exchange	2003 annual reports	Semiotics (paradigmatic and syntagmatic analysis)	CED paradigmatic (qualitative versus quantitative, positive news versus negative news) CED syntagmatic (past versus future, symbolic versus substantive)	A descriptive study that shows companies in both countries prefer quantitative, and positive news CED (paradigmatic signs), which is in line with motivation of reporting as explained by stakeholder and legitimacy theories. Companies in both countries provide more signs of past, followed by future outlook of CED, and create more symbolic messages of CED, that explained legitimization strategy under impression management theory.
Amran and Devi (2008)	201 listed companies on Bursa Malaysia (industrial products, consumer products, construction and infrastructure, trading/technology, property/hotel, finance, plantation/mining)	2002/2003 annual reports	Institutional theory	CSDQty (volume-based sentence) CSDQty (Index: 3 dimensions, 13 items, similar to Hackston and Milne (1996)) (Scoring rule: 0=absence, 1=presence)	Company size, industry, government institutional ownership, dependence on government are significant determinants of CSD.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Amran and Devi (2007)	201 listed companies on Bursa Malaysia (industrial products, consumer products, construction/ infrastructure, trading/ technology, property/hotel, finance, plantation/mining)	Year of annual report not specified	Political economy theory	CSDQty (volume-based sentence) CSDQty (Index: 3 dimensions, 13 items, similar to Hackston and Milne (1996)) (Scoring rule: 0=absence, 1=presence)	Government institutional ownership,dependence on government are significant determinants of CSD.
Ramasamy et al. (2007)	87 top companies listed on Bursa Malaysia	2002 annual reports	Hofstede	CSDQty (volume-based sentence)	CEO ethnicity and age are significant determinants of CSD.
Ghazali (2007)	87 non-financial companies listed on Bursa Malaysia	2001 annual reports	Positive accounting theory	CSDQty (Index: 22 items, in reference to Haniffa and Cooke (2002)) (Scoring rule: 0=absence, 1=presence)	Company size, director ownership, government institutional ownership are significant determinants of CSD.
Janggu et al. (2007)	45 listed companies on Bursa Malaysia	1998 to 2003 annual reports	Not specified	CSDQty (Index: 4 dimensions, 17 items) (Scoring rule: 0=absence, 1=presence)	Profitability is a significant determinant of CSD.
Smith et al. (2007)	40 listed companies on Bursa Malaysia	2000 annual reports	Not specified	CEDQ (Index: 25 items) (Scoring rule: 0=absence, 1=general disclosure, 2=detail disclosure, 3=quantitative disclosure)	Profitability is a significant determinant of CED.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Yusoff et al. (2007)	50 largest listed companies on Bursa Malaysia (plantation, property, trading/services, construction, industrial products, consumer products, infrastructure, finance)	2003 annual reports	Accountability Stakeholder theory	CEDQty (Index: 6 dimensions, 24 items, based on CSEAR UK and GRI) (Scoring rule: non-disclosure, general information, qualitative/narrative disclosure, quantitative disclosure, combination of qualitative and quantitative disclosure)	ISO 14000 certification is a significant determinant of CED.
Ghazali and Weetman (2006)	87 listed companies on Bursa Malaysia (technology, industrial products, consumer products, construction, trading/services, infrastructure project, hotel, properties, plantation, mining)	2001 annual reports	Agency theory Legitimacy theory Political cost theory Proprietary cost theory Signalling theory	Voluntary disclosure Qty (Index: 3 dimensions, 53 items) (Scoring rule: 0=absence, 1=presence)	Director ownership and leverage are significant determinants of CED.
Haniffa and Cooke (2005)	139 non-financial companies listed on Bursa Malaysia (industrial product, consumer product, trading/services, construction/property, plantation/mining)	1996 and 2002 annual reports	Legitimacy theory	CSDQty (volume-based words) CSDQty (Index: 5 dimensions, 41 items) (Scoring rule: 0=absence, 1=presence)	Company size, profitability, ethnicity, board independence and multiple listing are significant determinants of CSD. However, Chairperson with multiple directorships is only significant to CSDQty volume. Foreign ownership is only significant to CSDQty index.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Ahmad and Sulaiman (2004)	138 listed companies on Bursa Malaysia from ESI (construction and industrial products)	2000 annual reports	Legitimacy theory	CEDQty (volume-based sentence) CEDQty (Index: 4 dimensions, 12 items) (Scoring rule: 0=absence, 1=presence)	A descriptive study that shows the percentage of disclosing companies between construction and industrial products is almost similar. However, industrial products sector has higher volume-based sentence CEDQty than construction sector.
Thompson and Zakaria (2004)	257 largest listed companies on Bursa Malaysia	2000 annual reports	Not specified	CSDQ (Index: 3 dimensions, 12 items) (Scoring rule: volume-based sentence, page, derived pages)	A descriptive study that shows only 16% companies made some form of CED, which mainly were descriptive and highlighted on good news.
Ahmad, Sulaiman, et al. (2003)	98 listed companies on Bursa Malaysia from 9 industries (consumer products, industrial products, construction, trading/services, finance, infrastructure project, properties, plantation, technology)	2000 annual reports	Legitimacy theory	CSDQ (Index: 5 dimensions, 17 items) (Scoring rule: declarative, non-monetary, monetary; neutral, bad news, good news)	A descriptive study that shows a minimum disclosure of quantitative non-monetary and monetary, and bad news of CSD.
Ahmad, Hassan, et al. (2003)	299 listed companies on Bursa Malaysia	1999 annual reports	Contracting theory Political cost theory	CEDQty (Index: not mentioned) (Scoring rule: 0=absence; 1=presence)	Leverage, Big-5 auditor are significant determinant of CED.

Appendix 1: Empirical studies on CED (and CSD) using content analysis in Malaysia (continued)

Scholars	Sample Size	Year of reference	Theory	Measurement of CED (and CSD)	Findings
Haniffa and Cooke (2002)	139 non-financial listed companies on Bursa Malaysia	1995 annual reports	Agency theory Hofstede-Gray theory Stewardship theory Resource dependence theory	CSDQty (Index: 14 dimensions, 65 items) (Scoring rule: 0=absence, 1=presence)	Company size, profitability, assets-in-place, diversification, non-executive Chairperson, family members on board, ethnicity, foreign ownership, top-ten shareholder, industry are significant determinants of CSD.
Andrew et al. (1989)	119 listed companies on Malaysia and Singapore (banking and finance, mining, industrial and commercial, others)	1983 annual reports	Not specified	CSDQty (volume-based page number) CSDQ (Index: not specified) (Scoring rule: declarative, non-monetary, monetary)	A descriptive study that shows 26% companies made some CSD, with dominant disclosures in human resources. Most of these disclosures were made by larger companies, and declarative in nature.

Appendix 2: List of Sample Companies

No	Company Names	GICS Sector Classification
1	EDEN INC. BERHAD	Utilities
2	MEGA FIRST CORP. BHD	Utilities
3	PBA HOLDINGS BHD	Utilities
4	PETRONAS GAS BHD	Utilities
5	PUNCAK NIAGA HOLDINGS BHD	Utilities
6	SALCON BHD	Utilities
7	TALIWORKS CORPORATION BERHAD	Utilities
8	TENAGA NASIONAL BERHAD	Utilities
9	YTL CORPORATION BERHAD	Utilities
10	YTL POWER INTERNATIONAL BERHAD	Utilities
11	ALAM MARITIM RESOURCES BERHAD	Energy
12	KNM GROUP BHD	Energy
13	KUB MALAYSIA BERHAD	Energy
14	PERDANA PETROLEUM BERHAD	Energy
15	PERISAI PETROLEUM TEKNOLOGI BHD	Energy
16	PETRON MALAYSIA REFINING & MARKETING BHD	Energy
17	PETRONAS DAGANGAN BHD	Energy
18	SCOMI ENERGY SERVICES BHD	Energy
19	SCOMI GROUP BHD	Energy
20	SHELL REFINING CORPORATE (FEDERATION OF MALAYA) BERHAD	Energy
21	SILK HOLDINGS BERHAD	Energy
22	SUMATEC RESOURCES BERHAD	Energy
23	TANJUNG OFFSHORE BHD	Energy
24	TH HEAVY ENGINEERING BERHAD	Energy
25	WAH SEONG CORPORATION BERHAD	Energy
26	A-RANK BERHAD	Materials
27	ABRIC BERHAD	Materials
28	ADVANCED PACKAGING TECHNOLOGY M BHD	Materials
29	ALUMINIUM CO. OF MALAYSIA BHD	Materials
30	AMALGAMATED INDUSTRIAL STEEL BERHAD	Materials
31	ANALABS RESOURCES BERHAD	Materials
32	ANCOM BERHAD	Materials
33	ANN JOO RESOURCES BERHAD	Materials
34	ASIA KNIGHT BERHAD	Materials
35	ATURMAJU RESOURCES BERHAD	Materials
36	BATU KAWAN BERHAD	Materials

Appendix 2: List of Sample Companies (continued)

No	Company Names	GICS Sector Classification
37	BIG INDUSTRIES BERHAD	Materials
38	BP PLASTICS HOLDING BHD	Materials
39	BRIGHT PACKAGING INDUSTRY BHD	Materials
40	BTM RESOURCES BERHAD	Materials
41	CAN-ONE BERHAD	Materials
42	CENTURY BOND BHD	Materials
43	CHEMICAL CO. OF MALAYSIA BHD	Materials
44	CHOO BEE METAL INDUSTRIES BHD	Materials
45	CLASSIC SCENIC BHD	Materials
46	CONCRETE ENGINEERING PRODUCTS BERHAD	Materials
47	CSC STEEL HOLDINGS BHD	Materials
48	CYL CORP. BHD	Materials
49	CYMAO HOLDINGS BERHAD	Materials
50	D'NONCE TECHNOLOGY BHD	Materials
51	DAIBOCHI PLASTIC & PACKAGING INDUSTRY BHD	Materials
52	DAYA MATERIALS BHD	Materials
53	DENKO INDUSTRIAL CORP. BHD	Materials
54	DOMINANT ENTERPRISE BERHAD	Materials
55	EKSONS CORPORATION BERHAD	Materials
56	EONMETALL GROUP BHD	Materials
57	FACB INDUSTRIES INC. BHD	Materials
58	GE-SHEN CORPORATION BERHAD	Materials
59	HEVEABOARD BHD	Materials
60	HEXZA CORPORATION BERHAD	Materials
61	HIAP TECK VENTURE BHD	Materials
62	HIL INDUSTRIES BHD	Materials
63	IMASPRO CORPORATION BERHAD	Materials
64	INNOPRISE PLANTATIONS BHD	Materials
65	COMFORT GLOVES BHD (formerly known as INTEGRATED RUBBER CORPORATION BHD)	Materials
66	IRE-TEX CORP. BHD	Materials
67	IRM GROUP BHD	Materials
68	JAVA BERHAD	Materials
69	JAYA TIASA HOLDINGS BERHAD	Materials
70	JMR CONGLOMERATION BHD	Materials
71	JOHORE TIN BHD	Materials
72	KARYON INDUSTRIES BHD	Materials
73	KIA LIM BHD	Materials
74	KIAN JOO CAN FACTORY BHD	Materials
75	KINSTEEL BHD	Materials

Appendix 2: List of Sample Companies (continued)

No	Company Names	GICS Sector Classification
76	KUMPULAN EUROPLUS BHD	Materials
77	KYM HOLDINGS BHD	Materials
78	LAFARGE MALAYSIA BERHAD	Materials
79	LB ALUMINIUM BHD	Materials
80	LCTH CORP. BHD	Materials
81	LEADER STEEL HOLDINGS BHD	Materials
82	LEON FUAT BERHAD	Materials
83	LEWEKO RESOURCES BHD	Materials
84	LION CORP. BHD	Materials
85	LION DIVERSIFIED HOLDINGS BERHAD.	Materials
86	LION INDUSTRIES CORPORATION BERHAD	Materials
87	LUSTER INDUSTRIES BHD	Materials
88	LYSAGHT GALVANIZED STEEL BHD	Materials
89	MALAYSIA PACKAGING INDUSTRY BHD	Materials
90	MALAYSIA SMELTING CORPORATION BERHAD	Materials
91	MALAYSIA STEEL WORKS (KL) BHD.	Materials
92	MASTER-PACK GROUP BERHAD	Materials
93	MELEWAR INDUSTRIAL GROUP BERHAD	Materials
94	MENTIGA CORPORATION BERHAD	Materials
95	MERCURY INDUSTRIES BHD	Materials
96	METAL RECLAMATION BHD	Materials
97	MIECO CHIPBOARD BHD	Materials
98	MINETECH RESOURCES BERHAD	Materials
99	MINHO M BHD	Materials
100	MUDA HOLDINGS BERHAD	Materials
101	MYCRON STEEL BHD	Materials
102	NWP HOLDINGS BERHAD	Materials
103	NYLEX (MALAYSIA) BERHAD	Materials
104	OCTAGON CONSOLIDATED BHD	Materials
105	OKA CORP. BHD	Materials
106	ORNAPAPER BHD	Materials
107	PERUSAHAAN SADUR TIMAH MALAYSIA (PERSTIMA) BHD	Materials
108	PMB TECHNOLOGY BHD	Materials
109	PRESS METAL BHD	Materials
110	PRESTAR RESOURCES BHD	Materials
111	PRICEWORTH INTERNATIONAL BERHAD	Materials
112	PUBLIC PACKAGES HOLDINGS BHD	Materials
113	QUALITY CONCRETE HOLDINGS BHD	Materials
114	RALCO CORPORATION BERHAD	Materials
115	SCIENTEX BERHAD	Materials

Appendix 2: List of Sample Companies (continued)

No	Company Names	GICS Sector Classification
116	SEACERA GROUP BERHAD	Materials
117	SINO HUA-AN INTERNATIONAL BHD	Materials
118	SMPC CORP. BHD	Materials
119	SOUTHERN ACIDS M BHD	Materials
120	SOUTHERN STEEL BERHAD	Materials
121	SUBUR TIASA HOLDINGS BHD	Materials
122	TA ANN HOLDINGS BHD	Materials
123	TASEK CORPORATION BERHAD	Materials
124	TECNIC GROUP BERHAD	Materials
125	TEK SENG HOLDINGS BHD	Materials
126	TEKALA CORP. BHD	Materials
127	THONG GUAN INDUSTRIES BHD	Materials
128	TIMBERWELL BHD	Materials
129	TOMYPAK HOLDINGS BHD	Materials
130	TOYO INK GROUP BERHAD	Materials
131	UPA CORPORATION BERHAD	Materials
132	VERSATILE CREATIVE BERHAD	Materials
133	WANG-ZHENG BERHAD	Materials
134	WTK HOLDINGS BHD	Materials
135	YKGI HOLDINGS BERHAD	Materials