DETERMINANTS OF ENVIRONMENTAL REPORTING IN MALAYSIA FOR INDUSTRIAL PRODUCT SECTOR

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DETERMINANTS OF ENVIRONMENTAL REPORTING IN MALAYSIA FOR INDUSTRIAL PRODUCT SECTOR

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ABSTRACT

Following the new Malaysian Code on Corporate Governance (MCCG) 2012, the Malaysian government hopes to encourage companies, specifically the Public Listed Companies to adhere to the new code of conduct. The Adherence to the MCCG guidelines works together with the Listing Requirements by Bursa Malaysia that call for disclosure on environmental as part of the Corporate Social Responsible Report in the companies' annual report.

Thus, this study is motivated to examine the determinants that are associated to promote the environmental reporting disclosure practices of corporations in Malaysia. In particular, this study aims to examine two influential factors that affect environmental reporting disclosures which are corporate governance characteristics (i.e., board size, board independence, board diversity – religion and board diversity – gender) and corporate characteristics (i.e., company size, profitability, and free cash flow).

The study uses a total of 100 samples from the industrial product corporations listed on Bursa Malaysia for the year 2013. The study employs OLS and Tobit regression inclusive of robust regression for both models. The results indicate that board diversity of religion (Muslim directors); company size; profitability; and free cash flow have positive significant influence on environmental reporting disclosure practices. In summary, the study concludes that for the industrial product sector, the initiative for companies to disclose environmental reporting is much influenced by companies that have Muslim directors, with large amount of assets, with higher profitability and a large amount of extra cash. All in all, the companies are able to comply to any government's initiative towards a sustainability economy, provided the company applies the Taqwa paradigm as the foundation for good governance and the company is secured financially.

Keywords: environmental reporting, industrial product, Tagwa paradigm

ABSTRAK

Berikutan pembaharuan bagi Kod Tadbir Urus Korporat Malaysia (MCCG) 2012, kerajaan Malaysia berharap untuk menggalakkan syarikat-syarikat, khususnya syarikat awam yang tersenarai di Bursa Malaysia bagi mematuhi kod baru tersebut. Pematuhan terhadap MCCG 2012 ini adalah kesinambunagn dengan Keperluan Penyenaraian oleh Bursa Malaysia yang memerlukan pendedahan terhadap alam sekitar. Laporan alam sekitar ini adalah sebahagian daripada Laporan Tanggungjawab Sosial Korporat yang perlu dinyatakan di dalam laporan tahunan syarikat.

Oleh itu, keperluan laporan alam sekitar ini merupakan motivasi bagi kajian ini untuk mengkaji penentu yang menggalakkan pelaporan alam sekitar syarikat di Malaysia. Khususnya, kajian ini bertujuan untuk mengkaji dua faktor yang mempengaruhi tindakan pelaporan alam sekitar iaitu ciri-ciri tadbir urus korporat (iaitu, saiz papan, papan kemerdekaan, kepelbagaian lembaga - lembaga agama dan kepelbagaian - jantina) dan ciri-ciri korporat (iaitu, saiz syarikat, keuntungan dan aliran tunai bebas).

Kajian ini menggunakan sejumlah 100 sampel syarikat produk industri yang disenaraikan di Bursa Malaysia bagi tahun 2013. Kajian ini menggunakan OLS dan regresi Tobit termasuk regresi teguh untuk kedua-dua model. Hasil kajian menunjukkan bahawa kepelbagaian lembaga pengarah (pengarah Muslim); saiz syarikat; keuntungan; dan aliran tunai bebas mempunyai pengaruh yang signifikan terhadap amalan pendedahan laporan alam sekitar. Secara ringkasnya, kajian ini menyimpulkan bahawa bagi sektor produk perindustrian, inisiatif bagi syarikat-syarikat untuk mendedahkan laporan alam sekitar banyak dipengaruhi oleh syarikat-syarikat yang mempunyai pengarah yang beragama Islam, jumlah aset yang tinggi, tahap keberuntungan yang tinggi dan jumlah wang tunai tambahan yang banyak. Secara keseluruhannya, syarikat-syarikat dapat mematuhi sebarang inisiatif kerajaan untuk membentuk ekonomi yang mapan, jika syarikat tersebut menerapkan paradigma Taqwa pada setiap pengarah syarikat dan mempunyai kedudukan kewangan yang kukuh.

Katakunci: laporan alam sekitar, produk industri, paradigma Taqwa

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LIST OF ABBREVIATIONS

ACCA	: Association of Chartered Certified Accountants
BFEMALE	: Female directors
BIND	: Board Independence
BM	: Bursa Malaysia
BMUSLIM	: Muslim board members
BOD	: Board of Directors
BSIZE	: Board Size
CER	: Corporate Environmental Responsibility
CG	: Corporate Governance
CSIZE	: Company Size
CSR	: Corporate Social Responsibility
CSRR	: Corporate Social Responsibility Report
DTTI	: Delloitte Touché Tohmatsu International
EBITDA	: Earnings Before Taxes, Depreciation and Amortisation
EBITDAPERS	: Earnings Before Taxes, Depreciation and Amortisation Per Share
EQA	: Environmental Quality Act
ER	: Environmental Reporting
ERI	: Environmental Reporting Index
ERSCORE	: Environmental Reporting Score
ESG	: Environmental, Social Governance
FCF	: Free Cash Flow
FRS	: Financial Reporting Standard
FTSE	: Financial Times Stock Exchange
GRI	: Global Reporting Initiative
IAS	: International Accounting Standards
IFRB	: International Financial Reporting Board
IFRSB	: International Financial Reporting Standard Board
MASB	: Malaysian Accounting Standards Board
MCCG	: Malaysian Code on Corporate Governance

MTBV	: Market to book value
OLS	: Ordinary Least Square
PLCs	: Public Listed Companies
PROFIT	: Profitability
ROA	: Return on Assets
SMEs	: Small and Medium Enterprises
STATA	: Statistics of Analysis Data
UK	: United Kingdom
VIF	: Variance Inflated Factor
WWF	: World Wide Fund for Nature

CHAPTER 1: INTRODUCTION

1.1 Background of Study

Environmental issues have been one of the topics being discussed by governments, legislators and environmentalists worldwide. Such issues have harmful effects of human activity on the biophysical environment. Issues may include climate change, pollution, environmental degradation, and resource depletion such as air, water and soil. This leads to the destruction of ecosystems and the extinction of wildlife. Efforts to counteract such issues include environmental protection and environmental resources management.

Environmentalists had established campaigns and activities for protection of endangered species and protection of any ecologically valuable natural areas. For example, the World Wide Fund for Nature (WWF) has organised Earth Hour, a movement in uniting people to protect the environment through awareness campaign. The first campaign, which was held in Sydney, Australia in 2007, encourages people worldwide to switch off the non-essential lights for one hour as a symbol of their commitment to the planet (environment) (Celebrating Earth Hour, 2014). Also, there was another environmental campaign being launched by WWF-Malaysia and Nestle (Malaysia), for the conservation of the Setiu Wetlands in Terengganu in 2014. The human activities causing environmental degradation are usually the economic activities from corporate entities in achieving their interests (profit). These economic activities were usually executed without regard to the environment, health and socioeconomic impact on the people. As a result, the world requires an act of sustainability to prevent or reduce the effect of environmental degradation.

Due to this, corporations are introduced to the Corporate Social Responsibility (CSR) term. The term was defined by Bowen (2013) as a social responsibility of businessmen which means responsibilities on societies and environment. Corporations were suggested to establish a report of their non-financial activities that improved the well-being of human (community), workplace, market and environment. The report is known as Corporate Social Responsibility Report (CSRR). That means CSRR has made the Environmental Reporting (ER) an important component of CSR. The ER is established to provide environmental information such as corporate activities in protecting and preserving the environment (Shearer, 2002).

Globally, governments and legislators have also established its concern on the environment through developing regulations and policies such as the International Financial Reporting Standard Board (IFRSB), the Association of Chartered Certified Accountants (ACCA), and the Global Reporting Initiative (GRI). The IFRSB, for instance, has introduced Financial Reporting Standard (FRS) 101 – Presentation of Financial Statements. In the standard, companies are required to report their environmental information of human activities that could have effect to the environment. ACCA itself has launched its own sustainability award which is the ACCA Malaysia's Environmental and Social Reporting Awards (MESRA) in 2009 (ACCA, 2015). This award aims to recognise and reward organisations which report and disclose environmental, social or full sustainability information. GRI, on the other hand, is a non-profit organisation that promotes economic, environmental and social sustainability through developing a comprehensive sustainability reporting framework that is widely used around the world for all types of businesses, large or small. It has currently launched its latest framework in 2013 which is called the G4. This newly enhance framework includes a harmonization with other important global frameworks, including the OECD Guidelines for Multinational Enterprises, the UN Global Compact Principles, and the UN Guiding Principles on Business and Human Rights.

According to ACCA (2015), ER is a disclosure by corporations that their businesses are environmentally related regarding environmental impacts, environmental risks, policies, strategies or costs. The disclosures can be reported via the annual reports, a stand-alone corporate environmental performance report, a site-centred environmental statement or other mediums (e.g. website, staff newsletter, video, CD-ROM) (ACCA, 2015). However, the reports were made voluntarily by the corporations. The question of why ER is a voluntary act is because companies still have little understanding on why the ER should be disclosed (Gray, R., Kouhy, R., & Lavers, S., 1995). However, recent years of researches have shown that the awareness towards ER disclosure has increase and encourages a future prospect for mandatory disclosure of ER (Galani, Gravas and Stravropoulos, 2011; Suttipun and Stanton, 2012). Previous studies on the ER show that enforcement of mandatory requirements improved credibility of the corporation whereas voluntary disclosure invites positive investor sentiments, creating chances of attracting more investments (Deegan and Gordon, 1996; Kwong, Kent, and Marshall, 1997).

1.2 Problem Statement

Over the years, there have been a number of studies on ER practices in PLCs globally. Majority of the studies have found that ER was done on voluntary basis (e.g., Ku Ismail and Ibrahim, 2009; Joshi, Suwaidan, and Kumar, 2011; Suttipun and Stanton, 2012). The numbers of ER in corporations have then increased that studies have encouraged future prospect for mandatory disclosure on environmental information (Galani, Gravas and Stravropoulos, 2011; Suttipun and Stanton, 2012).

To date, some countries have made ER as one of the mandatory disclosures in the companies' annual reports. They are namely; Denmark, the Netherlands, Norway, and China. Malaysia has just recently joined the latter countries' initiatives through the Listing Requirements (LR) in annual reports commencing for the year 2007 for PLCs. In recent years, few studies on mandatory disclosure of ER were found. According to Barbu, Dumontier, Feleaga and Feleaga (2014), there has been no study that could link ER with the mandatory implementation of IASs/IFRSs of environmental disclosure. They concluded that the compliance depends on the country's regulatory constraints on ER (Barbu *et al.*, 2014).

In Malaysia, ER was introduced in the late 1990s. The Malaysian Accounting Standards Board (MASB) introduced the guidelines on preparing an ER under the Financial Reporting Standards (FRS) 101 – Presentation of Financial Statements. In 2003, ACCA, through the Corporate ER Conference, has provided guidelines for corporations in Malaysia to produce ER. This guideline was then being continued with the Sustainability Reporting Guidelines in 2005. In the following year, due to the environmental issues arising from the rapid development in economic growth globally, Malaysia begin to address the CSRR as an important information to be disclosed in the annual reports.

In other words, ER is now needed to be included in the annual reports for all the Public Listed Companies (PLCs) under the Bursa Malaysia (BM) Securities Berhad Main Market Listing Requirements (amended in September 2006) as part of the CSRR (Companies Commission of Malaysia (CCM), 2013). According to CCM (2013), the current report and disclosure framework in Malaysia by listed companies must comply to the BM listing requirements under Chapter 9, paragraph 9.25 (1), where a listed issuer must set out separately in its annual report, the items set out in part A of Appendix 9C (Paragraph 29). The items specifically states of a description of the corporate social responsibility activities or practices. This includes the business activities concerning the environmental issues. In the case of Malaysia, Ioannou and Serafeim (2014) found that regulation in Malaysia have insignificant effect on disclosures. The study concluded that Malaysia were more concentrated on firms' reporting guidelines (Ioannou and Serafeim, 2014).

The most recent guideline concerning ER would be the Malaysian Code on Corporate Governance (MCCG) 2012. MCCG 2012 was produced as part of the Corporate Governance Blueprint 2011 issued by the Securities Commission Malaysia in 2011. One of its aims was to promote the internalisation of corporate governance culture to the Malaysian corporation. In MCCG (2012), the code focuses on:

> "... clarifying the role of the board in providing leadership, enhancing board effectiveness through strengthening its and reinforcing its independence." and

> "... encouraging companies to put in place corporate disclosure policies that embody principles of good disclosure."(p. viii)

MCCG (2012) has required a compliance of the Principle 7: Ensure Timely and High Quality (Recommendation 7.1) where the board should ensure compliance with the disclosure requirements as set out in the BM Listing Requirements in their annual reports beginning the year 2012. Several studies have shown that CSR (environment) and Corporate Governance

(CG) are closely associated as they reflect the corporation's commitment to ensure the importance of all stakeholders (Jamali, Hallah and Abdallah, 2010; Buniamin, Alrazi, Johari and Abd Rahman, 2011). Thus, for effective CG, corporations must establish a strong and functional board of directors (BOD) (e.g. board composition, board independence, board diversity) which comes with responsibilities to aligned both financial and social needs in establishing the corporation's objective (Janggu, Darus, Mohammed Zain, and Sawani, 2014).

According to Barnhart, Marr, and Rosenstein (1994), BOD is one of the internal governance tools that could closely align the objectives of shareholders and managers. BOD could also uphold management's policy in line with the legislator's requirements. Zahra and Pearce II (1989) argue that CG in particular BOD can play a significant role in enhancing CSR performance. However, compliance towards the MCCG 2012 is voluntary compared to ER which has now been mandatory for PLCs in Malaysia.

This study represents the attempt to address the gap in the literature, particularly in providing a review on the determinants of ER by Malaysian PLCs on the compliance of MCCG 2012. Specifically, this study attempts to examine on a particular sector which is the Industrial product sector. Industrial Products sector (which includes oil and gas, metals manufacturing, cement manufacturing, chemicals, etc.) was chosen as according to Sulaiman, Abdullah and Fatima (2014), this sector have the perception to be one of the major environmental hazardous to the natural environment (Wiseman, 1982 and Deegan and Gordon, 1996).

1.3 Research Question

The motivation of this study is to examine whether the new MCCG 2012 practices is significant in promoting the environmental responsibility of corporations in Malaysia. The focus of this study is on the first item (environment) of the components that needs to be included in the CSR report of the corporation's, particularly the PLCs annual report. It is expected that companies that comply with the MCCG 2012 will be more environmentally responsible. Although the inclusion of the report is on voluntary basis, the establishment of MCCG 2012 as an additional enhancement for corporations was to improve its CG. So, in line with the objective of MCCG 2012, several research questions have developed as follows:

(i) Do Corporate Governance (CG) characteristics influence the ER practices in Malaysia?

(ii) Do Corporate Characteristics influence the ER practices in Malaysia?

1.4 Research Objective

The research objectives of this study are as follows:

(i) To examine the CG characteristics influences on the ER practices in Malaysia in compliance towards MCCG2012.

(ii) To examine the corporate characteristics influences on the ER practices in Malaysia in compliance towards MCCG2012.

This study will examine four corporate governance attributes namely board size, board independence, board diversity (religion), and board diversity (gender). In addition, this study is also interested to assess the influence of three corporate characteristics on ER reporting which are company size, profitability and free cash flow.

1.5 Significance of the study

In general, this study contributes to the accounting reporting literature by providing the recent situation of ER practices in Malaysia. In addition, the result of this study is expected to create essentials of integrating environmental considerations to the investment of shareholders in their decision-making process. Lastly, this study provides suggestions to policy makers on the factors that can influence ER towards being a mandatory report for all types of corporations/companies especially the small and medium enterprises (SMEs).

1.6 Scope and limitations of the study

The content analysis carried out by this study focuses only on the annual reports for the year 2013 as the changes on the report with accordance to the MCCG 2012 are done in the year 2013 specifically on the industrial product sector. The ER behaviour in Malaysia will be explained by four theories namely; (i) agency theory, (ii) signalling theory, (iii) legitimacy theory, and (iv) *taqwa* paradigm.

1.7 Organization of the research paper

The rest of the study will be structured as follows. Chapter 2 reviews previous studies on ER. Chapter 3 explains how hypotheses were developed and study is conducted. Chapter 4 reports and discuss the results. Lastly, Chapter 5 presents the conclusion and recommendation.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of related literatures on ER practices. It provides insight into the following issues: (i) global ER practice, (ii) the Malaysian ER practices, and (iii) other issues of prior studies on ER. This chapter also provides reviews on theoretical foundation and determinants derived from the theories that may influence the environmental reporting disclosure.

2.2 Environmental Reporting (ER)

There are a number of reviews on the definition of ER. Gray, Kouhy and Lavers (1995) define ER as the process of communicating the impact on environmental through the organizations' economic action to stakeholders within the community. This effort was done by companies through communicating environmental information to influence the public's perception especially its stakeholders towards their business operations.

This perception on ER is also agreed by Hooghiemstra (2000) clarifying that companies use environmental report as a communication instrument. The author uses the "Shell/Royal Dutch" case as the communication instrument in proving that a report on environmental information can influence public's perception on a corporate image. The publishing of "The Shell Report 1999" (The Shell/Royal Dutch case) is to defend its decision to do a deep-sea disposal of the Brent Spar in the Atlantic Ocean. As a result from the report, it has contributes in improving Shell's corporate image to become an environmentally awareness company.

Gray *et al.*, (1995) argues that companies use their environmental reports to construct themselves and their relationships with others as they strive to create and maintain the conditions for their continued profitability and growth. In order to understand the reason for providing environmental report, Schaltegger, Muller and Hindrichsen (1996) identified three basic principles of ER namely (1) sustainability, (2) accountability, and (3) transparency. These principles were defined by Schaltegger, Muller and Hindrichsen (1996) as follows:

> "Sustainability in ER implies that society must not use resources more than it can regenerate."
>
> "Accountability is concerned with an organization recognizing that its actions affect the external environment and therefore assuming responsibility for the effect of its actions. This principle implies to reporting to external stakeholders of the effects of actions taken by the organization and how they are affecting those stakeholders."
>
> "Transparency as a principle in ER means that the external impact of the actions of the organization can be ascertained from organisations reporting and pertinent facts are not disguised within that reporting." (p. 16)

Therefore these principles define the importance role of environmental information for the society. It shows the recognition for the organisation's responsibility towards the environment as per its business activities.

2.3 Development of ER

Many studies have been done in different parts of the world to investigate the existence of environmental disclosures. According to Sulaiman *et al.* (2014), one of the earliest researches done on ER was by Wiseman (1982). She examines the evaluation of quality and accuracy of

ER. The study uses 26 largest environmentally sensitive companies where these companies are more likely to be associated with visible environmental concerns, such as the greenhouse gas emission, pollution and the risk environmental disasters. The sampled companies are from oil, steel and paper industries in the United States of America (USA) for the year 1972, 1974 and 1976. She finds that ER for the companies was vague and incomplete. However, over the years, there's been a steady growth of ER especially among companies in the UK since 1980s (Gray, Collison and Bebbington, 1997).

According to Deloitte Touché Tohmatsu International (DTTI), (1993), ER can be produce in two primary forms either voluntary or mandatory reporting. DTTI (1993) views that voluntary ER involves environmental information by companies on voluntary basis as a value added criteria in order to portray the company as a responsible entity to the environment. Mandatory ER is viewed as environmental information being disclosed by companies as required by law. Most researchers find that ER is more favourable to produce on a voluntary basis (Deegan and Gordon, 1996; Galani *et al.*, 2011; Suttipun and Stanton, 2012; Makori, 2013; Akbas and Canikli, 2014). Depending on countries' legislative, ER disclosures can be divided as mandatory or voluntary disclosure. The environmental disclosures are mostly on voluntary basis around the world and they are at minimal exposure towards the importance of voluntary disclosure especially concerning the environmental information.

2.3.1 Voluntary ER

In early years of ER disclosures, few companies voluntarily disclose the environmental information in accordance to their environmental awareness (Deegan and Gordon, 1996). Deegan and Gordon (1996) examine whether the amount of environmental disclosure practices of Australian companies can be associated with the concerns of the community's environmental awareness. On average, only 186 words are used to disclose ER portraying more positive disclosures rather than negative disclosures among the sample of firms from the environmentally sensitive industries. However, the authors observe that there is still low voluntary environmental disclosure in Australia.

According to Gray *et al.* (1997), ER is made as part of the business reporting in their annual reports following the first publication of United Kingdom (UK) Environmental Report by Norsk Hydro in 1990. However, ER in UK is still being carried out as a voluntary basis (Gray *et al.*, 1997). Over the years, studies (e.g. Suttipun and Stanton, 2012; Ahmad and Ishwerf, 2014; Altarawneh, 2015) begin to find that many companies have become more responsive to stakeholders concerning the environmental awareness. This was shown through an increase amount of ER disclosure in their corporate annual reports (Wilmshurst and Frost, 2000).

Various researches have examine the quality and quantity of ER especially on the industrialized countries (e.g. Gray *et al.*, 1995; Deegan and Gordon, 1996; Buniamin, 2010; Sulaiman *et al.*, 2014). Most of prior researches study the extent of ER disclosures and factors associated with the ER. Hossain, Perera and Rahman (1995) examines the relation between five firm-specific characteristics (i.e. firm size, leverage, assets-in-place, type of auditor and foreign listing status) and the general level of information voluntarily disclosed by New Zealand's listed companies in the annual reports. The study contributes to policy makers that help them to understand corporate social behaviour and the importance of voluntary disclosures for their corporate image.

Pramanik, Shil and Das (2008), discuss on the corporate ER and guidelines globally and taking Indian scenario as its special reference. They conclude that the level, extent and style of environmental disclosure were not satisfactory in all respect. Ku Ismail and Ibrahim (2009) investigate the extent of social and environmental disclosure in the annual reports of Jordanian companies. The study examines the level of disclosure by using the firm size, government ownership and industry. They find that 85 percent of the sampled companies disclose social and environmental information in the annual reports. Galani *et al.* (2011) investigate the level of ER in Greece by analysing the relationship with some of the company characteristics (e.g., corporate size, profitability and listing status) against the existence of environmental disclosures. The study finds that only the corporate size is significantly associated with the environmental disclosures. This means that the larger the company size, the higher is the level of disclosure of environmental information.

Suttipun and Stanton (2012) also examines the level of ER in Thailand and tests whether there are any relationships between the amount of environmental disclosures and a number of company characteristics (e.g., company size, industry type, ownership status, country of origin and profitability) in a more developed country. They find that the results support the legitimacy theory as it indicates that larger companies with more community concerns make more environmental disclosure. The study also encourages for mandatory requirements for environmental disclosure in Thailand. Makori (2013) examines the association between the ER and firm's profitability from 14 randomly selected quoted companies in Bombay Stock Exchange in India. Four profitabilities that the study examines are (i) return on capital, (ii) net profit margin, (iii) dividend per share, and (iv) earnings per share. The study finds that there were positive association between the firm's profitability and ER.

There are also longitudinal analysis on ER. Akbas and Canikli (2014) examine the status of environmental disclosures of 62 non-financial companies in Turkey. This study make a comparison of ER in annual reports for the year 2010 and 2011. They find that most Turkish companies disclose qualitative environmental information in their annual reports. A study done by Bhattacharyya (2014) compare the ER in the annual reports for the year 2006 and 2007 of the 47 Australian small and large companies from five industries (chemical, forestry and paper, industrial engineering, industrial transport and mining). In general, the study shows that the extent of environmental disclosure is fairly low with industrial transport industry to have the most disclosure of environmental information. There is also a cross-country comparison on the level of environmental disclosure such as the comparison between UK and US firms which reveals that most environmental disclosures were in the qualitative form (Holland and Foo, 2003).

Some studies examine ER for specific industry such as in petroleum, oil and gas companies. Ionel-Alin, Emil and Maria (2012) examine how the disclosure of environmental information varies across the largest entities in the petroleum industry for the year 2009. The study find that the corporate governance characteristics can influence the transparency in ER especially on industry that is highly environmentally sensitive. According to Ionel-Alin *et al.* (2012), an independent board of directors will be able to solve any conflict of interest that could prevent a company to disclose any business activities that may cause environmental impact. Ullah, Hussain, and Yakub (2014) examine the environmental disclosure practices among 31 listed textile companies in Bangladesh for the year 2012. The study finds that more than two third of the selected sample companies do not disclose environmental information as the practice was on voluntary basis.

Apart from all the researches being discussed above, it has been shown that many of the companies are still unaware on how their business activities will have a negative impact on the environment reporting. Recent years have shown that stakeholders (e.g. investors, shareholders, and suppliers) are increasingly requesting better environmental disclosures in annual reports and accounts that can portray the company's performance. This is also been supported by empirical studies that have suggests that ER should be given a mandatory treatment in the annual reports (e.g. Suttipun and Stanton, 2012; Ullah *et al.*, 2014). These studies conclude that environmental disclosure has opened the eyes of many researches to explore even greater depth on this issue of proposing a mandatory requirement for financial reporting in the future.

2.3.2 Mandatory ER

Even though ER is a new practice to be implemented in the annual reports, several guidelines and legislation have been developed for the formation of a solid ER (Pramanik *et al.* 2008). Thus, it is also a move for the preparation towards mandatory reporting on environmental information. According to Pramanik *et al.* (2008), the guidelines and legislations concerning ER have been developed by several organisations; (1) International Industrialised Organisations, (2) Government Initiatives, and (3) Accounting Bodies Initiatives. The International Industrialised Organisations initiative produces guidelines on ER as listed by Guo (2005, p.4):

1. CERES Principles by Coalition Environmentally Responsible Economies in 1992.
2. PERI Guidelines by Public ER Initiative in 1993.
3. The Eco-Management and Auditing Scheme by European Commission in 1993.

4. ISO 14000 standards by International Organisation for Standardization in 1996.
5. Sustainability Reporting Guidelines by Global Reporting Initiative in 1999 (updated in 2002, 2011 and 2013).

Some governments have made their initiatives in adopting a mandatory requirement for ER to be included in the annual reports such as Denmark, the Netherlands, and France. According to Gray *et al.* (1996), Denmark and the Netherlands have made ER as part of its annual reports in 1996. This was followed by France when the regulation was enforced in 2002 under the New Economic Regulations (Nouvelles Regulations Economiques) for all of its listed companies (Barbu *et al.*, 2014). Malaysia has started its regulation on having the ER in the annual report of listed companies as prescribed by Chapter 1 of the Listing Requirements of Bursa Malaysia starting 2006. However the disclosure stood as part of the four main areas of the Corporate Social Responsibility Report (CSRR) (Bursa Malaysia, 2014). This means that companies would adopt the compliance of the listing requirements of producing the CSRR which may include the ER.

The International Financial Reporting Board (IFRB) has also made initiatives to support the idea of producing ER in the annual reports through the enhancement of its International Financial Reporting Standards (IFRSs) and International Accounting Standards (IASs). According to Barbu *et al.* (2014), some of the standards that have an indirect influence on ER are; (1) IAS 1 – Presentation of Financial Statements, (2) IAS 2 – Inventories (waste) and (3) IAS 36/IFRS 6 – Tangible assets with exploration of mineral resources. Barbu *et al.* (2014) investigates whether the level of ER under IFRSs/IASs is related to firm size and the strength of legal and regulatory constraints on ER for countries in UK, France and Germany that initiate the regulations. The result shows that the standards of IFRSs/IASs were not applied consistently across firms and across countries.

2.4 Environment Reporting in Malaysia

Until recently, there has been no standard setter that has made the environmental disclosures in the annual report as mandatory for companies in Malaysia. The only environmental information that needs disclosure is presented under Section 37 of the Environmental Quality Act 1974 (EQA 1974). The EQA 1974 requires companies to notify the public on activities that may have major impact on the population and the environment.

The closest guideline in recommendation of the environmental disclosure is through the accounting bodies such as the Malaysian Accounting Standards Board (MASB), the Malaysia Code on Corporate Governance (MCCG), ACCA, ER Guidelines and the Bursa Malaysia Listing Requirements. In 1999, the MASB introduced the guideline on the Financial Reporting Standard (FRS) 101- Presentation of Financial Statements, where the guideline suggests that companies to prepare environmental reports and value added statements to supplement the financial reports. This was supported by the ACCA ER Guidelines for Malaysian Companies in 2003 in collaboration with the Malaysian Development of Environment (DOE). The guidelines specify what ER might contain which follows examples from companies around the world. This guideline was then improved by the Sustainability Reporting Guidelines in 2005.

Bursa Malaysia Securities Berhad has also participated in the ER through its Corporate Social Responsibility (CSR) Framework. In 2006, Bursa Malaysia produced the CSR Framework (paragraph 29C of the listing requirements) where all PLCs are required to report their social activities including the environmental information in the annual reports beginning the year of 2007. In conjunction to the listing requirements, Malaysia has also launched the enhancement of MCCG 2012. Under the MCCG 2012, ER is encouraged to be presented in the annual reports as compliance to the listing requirements of Bursa Malaysia. This is particularly stated under the Principle 7 of MCCG 2012.

Recently, Bursa Malaysia has announced the launch of its Environmental, Social and Governance (ESG) index for PLCs in Malaysia on 22 December 2014 (The Star, Dec 2014). The ESG index was named FTSE4Good Bursa Malaysia Index as it is collaboration between Financial Times Stock Exchange (FTSE) and Bursa Malaysia. The index is one of the first in Asia to be part of the globally benchmarked FTSE4Good Index Series and is the latest step in the Bursa Malaysia sustainability's target to maintain a better standard of corporate governance in the marketplace (Bursa Malaysia, 2015). Referring to the activities above, this has made it certain that the Malaysian government is moving towards building an image of better corporate governance model that balances between profitability and sustainability of the environment.

In Malaysia, researchers have find that the percentages of environmental disclosures are still at minimal level (e.g. Thompson and Zakaria, 2004; Sumiani, Haslinda and Glen, 2007). Jaafar and Buniamin (2004) examined the manager's perception of the awareness of the ER. They find that managers are aware that by disclosing environmental information can enhance their corporate image. Thus their preference to disclose is in the special environmental report rather than the annual report.

However, a longitudinal study by Elijido-Ten (2007) shows that the number of companies in Malaysia that voluntarily provide environmental disclosure for the year 2000 and 2001 have increased but most of the disclosures were still confined to general descriptions. Thus, there is still some room of improvements to be tackled in future reporting's. Alrazi, Sulaiman, and Nik Ahmad (2009) examine the ER practices using a longitudinal analysis for 150 largest companies in Malaysia (by market capitalization) between the year 1999 and 2006. Over the eight years period, they find that there was an increase of ER from the sampled companies from 45 companies in 1999 to 64 in 2006. This study compliments the action taken by Bursa Malaysia with its introduction of the Listing Requirements of Public Listed Companies in 2006.

A number of studies are developed using different types of measurement and theoretical perspectives for examining the quality and quantity of ER in Malaysia. Mokhtar and Sulaiman (2012) examined the extent of ER in 47 Government Linked Companies (GLCs) in Malaysia using a disclosure index developed by the ER Score Sheet of the ACCA Malaysia Environmental and Social Reporting Awards (MESRA 2006). They concluded that statistically, there were not much difference in the level of ER between GLCs with sensitive industries (chemical, construction, plantation, transportation, mining and resources, petroleum and industrial products) than GLCs with less sensitive industries. However, ER in GLCs have increased when 70 percent of GLCs disclosed environmental information mostly in a declarative form (Mokhtar and Sulaiman, 2012).

Researches in Malaysia have also been done on specific industries or sectors. A study done by Othman and Ameer (2010) on the extent of annual ER was spesifically on the palm oil companies in Malaysia. They investigate the location of the disclosure of related environmental activities for the protection of earth, air and water. The results shows that there is still little transparency on the environmental disclosure even for the palm oil companies. It was argued that less transparency in reporting would probably be due to the ignorants of stakeholders (Othman and Ameer, 2010). The extent of ER was examined on financial institutions that has Islamic status by Yusof and Darus (2014) using an Islamic CSR-environmental index. The study finds that the environmental information disclosed is still at a minimal level and in qualitative form (Darus, Yusoff and Mohd Azhari, 2013). Although the study expects that with managers being a muslim, the environmental information should be more transparent on their concern on the effects of business activities to the environment.

2.5 Theoretical Foundation

There are different theoretical approaches concerning the environmental disclosures being provided by companies. Examples of theories which are commonly used by researches are agency theory, stakeholder theory, and legitimacy theory. This study uses four different theories in choosing the determinants of environmental reporting which are agency theory, signalling theory, *taqwa* paradigm and legitimacy theory.

According to Jensen (1986), agency theory states that organisations are needed to help monitor and give incentives to agents doing coordinated, cooperative work. Hence, having a good relationship between shareholders and managers is important as both needs to have similar understanding of the business's goals. Agency theory also suggests voluntary disclosure as a tool to offset the divergent interests between shareholders and the managers including in improving poor management (Buniaman *et al.*, 2011). In this scenario, companies are suggested to have a good corporate governance framework which can not only align both the principals and agents goals, but also reduce the agency costs (Judge, 2003).

This study follows prior studies that consider board size, board independence, and board diversity as some of the proxies for agency conflicts (i.e., Buniamin *et al.*, 2011; and Salehuddin and Fadzil, 2013). Board diversity will be analysed on religion (Muslim) and gender (Female). However, board diversity will be supported by other theories that are closely relevant to their purpose of designation as a director (manager).

A recent resurgence theory that researches have been using is the *Taqwa* Paradigm which is introduced by Dusuki (2008) (e.g., Khatun and Alautiyat, 2012; Platanova, 2013; and Bahari and Yusuf, 2014). The *taqwa* paradigm explains the reason for selecting board diversity on religion as a proxy for this study. According to Dusuki (2008), the basic of corporate social responsibility is based on the concept of *khalifah* (vicegerent) and taqwa (piety). The concept of *khalifah* is mankind that lives and represents Allah on earth in accordance with the laws of Allah (Dusuki, 2008). Thus, the paradigm of *taqwa* (piety) means a person is instilled with a strong understanding that their role in this world is to manage and develop the world in accordance with the Shari'ah (Bahari and Yusuf, 2014). However, most of the researches (i.e. Yusoff, Darus, Fauzi and Purwanto, 2013; Wan Jusoh, Ibrahim and Napiah, 2015) applies *taqwa* paradigm to investigate on the aspects of CSR reporting against the quality of corporate governance in Islamic institutions. Other studies compare between *taqwa* paradigm concept and western theories (i.e., Dusuki, 2008; Platonova, 2013; Wan Jusoh *et al.*, 2015).

According to Dainelli, Bini, and Giunta (2013), companies that think they are undervalued will tend to disclose more information including private information to attract investors. Thus, signalling theory usually posits a positive relationship between firm performance and environment disclosures (Dainelli et al., 2013). However, signalling theory provides an additional basis for this study's discussion of the relationship between board diversity on gender and environmental reporting. According to Bear, Rahman and Post (2010), signalling theory assumes asymmetric information. Thus the theory proposes that parties may transfer observable information, through observable signals that are meaningful to the other party. In this regard, the existence of women on a company's board signals the observers that the firm pays attention to the minorities and women, indicating that the company is socially responsible. It is expected that this signal of having more women on the board to be effective as one expects companies with a strong signal to have more favourable CSR ratings, and a better reputation on ER disclosure (Bear *et al.*, 2010).

Legitimacy theory argues that how the company will react on disclosing information of the company depends on the expectation from the stakeholders (Lindblom, 1994). According to Nik Ahmad (2004), legitimacy theory is based on the notion of an implied social contract between a social institution and society. The theory posits that institutions need to appear to have goals, which are congruent with those of society at large. In Malaysia, there has been an increase awareness of the environmental impacts of businesses on society. Legitimacy theory suggests that firms will take steps to ensure that their activities and performances are acceptable to society (Nik Ahmad, 2004). Consequently, these firms may then use their annual reports to portray the image of being environmentally responsible, so that they will be perceived by society as such. Disclosing more reliable environmental information to stakeholders will enhance their perception on the company and company's performance.

2.6 Determinants of ER Disclosures

In literature, many other researchers (e.g. Zubaidah, Nurmala and Kamaruzaman, 2009; Buniamin, 2010; Salehuddin & Fadzil, 2013; Janggu *et al.*, 2014) have examined the relationship between variety of corporate governance characteristics and financial characteristics. The results, however, are mixed. Examples of corporate governance characteristics are the board size, board independence, board diversity and multiple directorships. Whereas financial characteristics such as company firm, profitability, leverage and growth are used by researches (e.g. Deegan and Gordon, 1996; Smith, Yahya, and Amiruddin, 2007; Joshi, Suwaidan, and Kumar, 2011; Suttipun and Stanton, 2012) when investigating its relationship with ER disclosures.

2.6.1 Corporate Governance Characteristics

It is argued that with the new MCCG 2012, the role of board of directors is enhance as Wan Abdullah, Buniamin and Mohd Ghazali (2011) claims that good corporate governance has an important role in promoting corporate environmental transparency and accountability to their stakeholders. Thus, there is also the need to contribute to the well-being of their communities, environment, and societies or commonly referred as performance by many researchers (Janggu *et al.*, 2014). According to Jamali *et al.* (2010), corporate governance and CSR (environmental) are closely related as they reflect a firm's commitment to its internal stakeholders as well as to the environment and society at large. This study attempts to investigate the corporate governance factor that may be associated with ER.

2.6.1.1 Board Size

Prior studies have used a number of corporate governance's characteristics in examining the relation with ER. Researches in Malaysia have found that board size (e.g., Zubaidah *et al.*, 2009; Buniamin *et al.* 2011; Janggu *et al.*, 2014), board independence (Salehuddin & Fadzil, 2013) and management ownership (Buniamin *et al.*, 2011) were among significant variables when associated with ER. While Chief Executive Officer (CEO) duality (Abdul Razak and Mustapha, 2013), frequency of board meetings and financial expertise (Buniamin *et al.*, 2011;

and Janggu *et al*., 2014) were among insignificant variables. These variables were examined based on various sectors of the public listed companies in Malaysia. Few have examined the association of corporate governance characteristics with the environmental disclosure on a specific industry.

According to Florackis (2008), boards of directors with more than seven or eight members are unlikely to be effective. This is because larger number of people will tend to disrupt the effectiveness of communication, coordination and decision-making. As a result, the end decision will be controlled by top management. In Malaysian context, under the MCCG 2012, there are no requirements concerning the number of directors in a company as a measurement for efficiency as long as it consists of more than two individuals per company. Previous studies using board size finds that board size have no significant association with environmental disclosures (e.g., Wan Abdullah *et al.*, 2012; Abdul Razak and Mustapha, 2013). This negative relationship agrees with most researches that find smaller board size can effectively perform better in ER (Zubaidah *et al.*, 2009). However, recent study by Janggu *et al.* (2014) finds that there is a positive relationship between board size and the sustainability reporting. Several studies show that larger boards may have larger influence on the ER in the annual report (e.g. Zubaidah *et al*., 2009; Buniamin *et al.*, 2011).

Results on the association in the specific industry might be different from association with various industries. Ionel-Alin *et al.* (2012) examined corporate governance characteristics to explain the environmental disclosure in the petroleum and petroleum refining industry for the year 2009. The study focuses on the relation between characteristics namely; (1) independent non-executive directors, (2) board size, and (3) safety and social responsibility (environmental) committee. They concluded that the independence of the board and environmental committee plays an important role on disclosing the environmental information. While larger board size does not have a big implication on disclosing more environmental information in the annual reports (Ionel-Alin *et al.*, 2012). This result contradicts to Buniamin *et al.* (2011) where the association of board size with environmental disclosure was significant when using sampled data from ten different industries.

2.6.1.2 Board Independence

MCCG (2012) defines an independent director as a director who can provide strong leadership by being able to marshal board's priorities more objectively. If the chairman is not an independent director, the board members must comprise of majority of independent directors to ensure a balance of power and authority on the board (Securities Commission Malaysia, 2015). Therefore, it is expected that the more independent is the board member, the more likelihood of ER disclosure (e.g., Htay, Ab.Rashid, Adnan and Meera, 2012; Salehuddin and Fadzil, 2013). These independent directors are expected to represent the interest of the stakeholders. As of January 2012, Bursa Malaysia Listing Requirements dictates that a listed company must ensure that at least two directors or 1/3 of the board of directors, whichever is the higher, are independent directors (Part B, Chapter 15 of Bursa Malaysia Listing requirements).

Studies by researches in Malaysian context find an insignificant relationship between board independence and the ER (Buniamin *et al.*, 2011; Abdul Razak and Mustapha, 2013). They find that although the board may be independent, the environmental information may not be considered as an important item of the company's performance. However, Salehuddin and Fadzil (2014) and Htay *et al.* (2014), find that independent non-executive directors have positively related to ER. This is consistent with Ionel-Alin *et al.* (2012) that examine the ER of the global petroleum industry. The evidence indicates that a higher number of independent non-executive directors have a higher impact on the transparency of the ER in the annual reports.

2.6.1.3 Board Diversity-Religion

There are also studies that use board diversity such as gender (e.g., Ayuso and Argandona, 2007; Miller and Triana, 2009), age (e.g., Ibrahim and Mohd Hanefah, 2014), ethnic and religion (e.g., Dusuki, 2008; Alarussi, Hanefah and Selamat, 2009, Paino, Bahari and Abu Bakar, 2011) as one of the corporate governance characteristics. Prior studies show that there are positive relationships between board diversity against the environmental disclosure (e.g., Paino *et al.*, 2011; Ibrahim and Mohd Hanefah, 2014).

According to Paino *et al.* (2011), transparency, accountability and disclosure are important concepts in corporate governance. However these concepts are not foreign from Islam. According to Paino *et al.* (2011), the Holy Qur'an mentioned in the verses 282 and 283 of Surah Al-Baqarah on how a company should conduct its business transactions:

> "O you who believe! When you contract a debt for a fixed period, write it down. Let a scribe write it down in justice between you. Let not the scribes refuse to write as Allah has taught him, so let him write. Let him (the debtor) who incurs the liability dictate, and he must fear Allah, his Lord, and diminish not anything of what he owes. But if the debtor is of poor understanding, or weak, or is unable himself to dictate, then let his guardian dictate in justice. And get two witnesses out of your own men. And if there are not two men (available), then a man and two women, such as you agree for witnesses, so that if one of them (two women) errs, the other can remind her. And the witnesses should not refuse when they are called on (for evidence). You

should not become weary to write it (your contract), whether it be small or big, for its fixed term, that is more just with Allah; more solid as evidence, and more convenient to prevent doubts among yourselves, save when it is a present trade which you carry out on the spot among yourselves, then there is no sin on you if you do not write it down. But take witnesses whenever you make a commercial contract. Let neither scribe nor witness suffer any harm, but if you do (such harm), it would be wickedness in you. So be afraid of Allah; and Allah teaches you. And Allah is the All-Knower of each and everything." (Al-Baqarah: 282) and

"And if you are on a journey and cannot find a scribe, then let there be a pledge taken (mortgaging); then if one of you entrust the other, let the one who is entrusted discharge his trust (faithfully), and let him be afraid of Allah, his Lord. And conceal not the evidence for he, who hides it, surely his heart is sinful. And Allah is All-Knower of what you do." (Al-Baqarah: 283)

The above verses concludes that (i) detailed justification on the standard of procedures when carrying out a transaction and (ii) mentioned the essential of proper book keeping avoiding any unfairness (Paino *et al.*, 2011). These verses show that Islam takes great attention on transparency and accountability in business transactions in line with the concept of corporate governance.

According to Hassan and Christopher (2005), the majority Muslim dominated society in Malaysia expects higher level of disclosure practices in companies' annual reports. Such disclosure is seen as a communication mechanism in promoting Islamic values practiced by companies. Sallehudin and Fadzil (2013) examine the relationship between the existences of Muslim Board Chairman with corporate environmental responsibility (CER) disclosure. They find that there is a significant relationship between Muslim Board Chairman and the extent of environmental disclosures thus proves that Muslim Board Chairman can positively influence ER disclosure.

2.6.1.4 Board Diversity-Gender

Gender (female) attributes is normally use either to determine its influence on the company's performance (e.g., Abdullah and Ku Ismail, 2013; Zainal, Zulkifli and Saleh, 2013; Akpan and Amran, 2014; Abdullah, 2014) or the company's CSR disclosure (e.g., Bear, Rahman and Post, 2010; Ibrahim and Hanefah, 2014; Margaretha and Isnaini 2014). Under the signalling theory that assumes asymmetry information, having women in the company's board of directors identifies a signal that the company is concerned over the issue of women and the minorities. Thus portrays the latter perception that the company is socially responsible and have more initiative for disclosing social activities (Bear *et al.*, 2010).

In addition, Bear *et al.* (2010), state that women directors are believed to be more influential towards communicating among the board members as they are more open to conversations. Bear *et al.* (2010) examines how the number of woman on boards affects the company's CSR ratings and how CSR influences company's' reputation. The study took sample companies from Fortune's 2009 Most Admired List and finds that the more number of woman on boards, the higher the ratings of CSR and the reputation of the company. Thus, this encourages the boards to voluntarily disclose more information of the company to stakeholders.

In the Malaysian context, the Malaysian government has introduced a policy in 2004 that wanted at least 30 per cent of the top management position in the public sector to be occupied by women (Abdullah and Ku Ismail, 2013). In 2011, the Prime Minister of Malaysia, Datuk Seri Najib Razak, announced that the percentage of women occupancy in top management position has increased from 18.8 per cent in 2004 to 32.3 per cent in 2011. Following this achievement, he wanted the policy to continue to be implemented to all sectors (both public and private) by 2016 (Fong, 2012). However, a research by Abdullah and Ku Ismail (2013) uses Women board members as its attributes find that board gender has significant influence against CSR disclosures. Other researches from countries in Asia such as Indonesia (Handajani, Subroto and Saraswati, 2014), Australia (Corkery and Taylor, 2012) and Jordan (Akpan and Amran, 2014) also find significant results when examining the influence of Women board members on the company's performances and CSR disclosures. To the author's knowledge, only a research by Rao, Tilt and Lester (2012) examines the influence board gender (female) against ER disclosure specifically of 100 Australian large listed companies for the year 2008. According to Rao *et al.* (2012), they find that the proportion of female directors is positively significant against the environmental disclosure.

2.6.2 Corporate Characteristics

Corporate characteristics such as company size, profitability, free cash flow, growth, and leverage are the most common attributes being used by most researches (e.g., Deegan and Gordon, 1996; Galani *et al.*, 2011; Suttipun and Stanton, 2012; Bhatcharyya, 2014) when investigating its relationship with ER disclosures. These characteristic are usually selected to be the control variables when examining association with environmental disclosures (Buniamin *et al.*, 2011). Various findings (i.e. Joshi *et al.*, 2011; Galani *et al.*, 2011; Barbu *et* *al.*, 2014) shows that company size is usually positively significant when associated with the ER disclosures.

2.6.2.1 Company Size

Most studies find a positive relationship between company size and the environmental disclosure (i.e. Deegan and Gordon, 1996; Joshi *et al.,* 2011). While size is known for being a representative for company visibility, it also represents the company capability in a financial manner to have social responsibility and environmental activities (Joshi *et al.*, 2011). A recent study by Barbu *et al.* (2014), examine the mandatory reporting of environmental information in compliance with IAS/IFRS on three potential countries which are Germany, France and UK. They find that company size is a relevant proxy for the influential factor against ER on a mandatory basis.

In Malaysia, researchers have found evidence that company size will usually one of the factors to have a positive relationship against ER (Alarussi *et al.*, 2009; Buniamin, 2010; Sulaiman *et al.*, 2014). Larger companies may have larger monetary capabilities to cover the costs of reporting environmental information in the annual reports. Buniamin *et al.* (2011), uses two company characteristics (which are company size and industry) as control variables to examine whether the good corporate governance practices is significant in explaining the environmental responsibility of companies in Malaysia. They find that larger companies and companies that have activities with higher impact on the environment disclosed more information of the environment for their stakeholders.

Sulaiman *et al.* (2014) uses company characteristics which are share ownership, profitability, company size and leverage to examine the quality of environmental disclosure in the annual reports in Malaysia. The finding concluded that company size and leverage have a significant relationship with the quality of ER compared to the other two attributes which are share ownership and profitability.

2.6.2.2 Profitability

Profitability usually will be referred to as one of the indicators to measure a company's performance (Makori, 2013). Prior researchers would use profitability as their control variables to examine the relationship between financial attributes against ER (Lang and Lundholm, 1993; Alarussi *et al.*,, 2009; Suttipun and Stanton, 2012). Mix results were found on profitability. In earlier research, Lang and Lundholm, (1993) views that companies with lesser profit would provide more disclosure on environmental information. Companies might use the condition of having lesser profit as a mechanism of defence towards its stakeholders that less profit means more expenses were made especially for the ER. However, in the Malaysian context, researches (i.e. Sulaiman *et al.*, 2014 and Ong, Teh, and Ang, 2014) views that a company having higher profit have positive impact on ER as this indicates that a company have larger resources to provide a quality disclosure of their environmental information.

2.6.2.3 Free Cash Flow

Jensen (1986) defines free cash flow as cash flow in excess of that required by companies to fund its entire project with positive net present value. Jensen (1986) argues that companies with larger free cash flow would tend to have more severe agency problems. Without proper control in place, managers may be involved in non-value-maximizing activities and disgorge the cash rather than investing it at below the cost of capital or wasting it on organization inefficiencies. Rather than providing ER disclosures which is considered beneficial to shareholders, managers of substantial free cash flow would opt for other activities or spending that would benefit them.

Therefore, it is argued that firms with substantial free cash flow would have more severe agency problems. This study employs simple free cash flow measure define as earnings before taxes, depreciation and amortisation (EBITDA) deflated by number of shares outstanding. Several previous studies use the equivalent measures as proxy for free cash flow (i.e. Dittmar and Mahrt-Smith, 2007; Brisker, Çolak & Peterson, 2013; Alikhani and Maranjory, 2013).

2.7 Chapter summary

In summary, existing studies (e.g., Zubaidah *et al.*, 2009; Buniamin *et al.*, 2011; Mokhtar and Sulaiman, 2012; Sallehuddin & Fadzil, 2013; Janggu *et al.*, 2014; Buniamin, 2010) finds mixed results on the relationship between company characteristics (corporate governance characteristics and corporate characteristics) and ER. Overall empirical analysis on this study has been inconclusive, ranging from findings of positive, neutral and negative association between determinant variables and ER disclosure. In addition, some studies (e.g., Othman and Ameer, 2010; Ionel-Alin *et al.,* 2012; Yusoff and Darus, 2014) have also used sample size within a specific industry which is believed to be more environmentally sensitive compared to other industries. There are also various theories (i.e., agency theory, legitimacy theory, signalling theory and the most recent is *taqwa* paradigm) which are used to support various hypotheses of each study.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter discusses the theoretical research framework, research design and hypotheses development based on four (4) selected theories which are the (1) Agency Theory, (2) Signalling Theory, (3) Legitimacy Theory, and (4) *Taqwa* Paradigm. Section 3.1 clarifies the underlying theory that help explains the determinants of environmental reporting. Next, sections 3.2 discuss and explain hypotheses development for determinants of environmental reporting in Malaysia. Section 3.3 discusses the research design of the study and lastly, section 3.4 discusses on how the data is being analysed.

3.2 Theoretical Framework

According to Deegan (2002), researchers need to look into different theoretical perspective in order to understand the environmental report and disclosure. Different theories should be seen as complimentary rather than competing with each other to prove hypotheses (Carpenter and Feroz, 2001). Therefore this study uses four selected theories, (1) Agency Theory; (2) Signalling Theory; (3) Legitimacy Theory; and (4) *Taqwa* Paradigm to support the development of hypotheses. Employing these theories is consistent with Nobes (2014) that suggests that the combination of various theories can provide a better explanation on the environmental disclosure.

Agency theory posits that where there is a separation ownership and control of a company, agency cost will exist. This is due to the conflicts of interest between principal and agent (Jensen and Meckling, 1976). According to Jensen and Meckling (1976), agency costs that are being borne by managers may motivate them to voluntarily disclose social responsibility information (environmental) in order to reduce the agency costs. Larger information asymmetry will also exist between managers and shareholders if managers do not reveal more information that will benefit the stakeholders (Gantyowati and Nugraheni, 2014). According to Peter and Romi (2015), agency theory also suggests that board's membership be independent to better monitor management when disclosing sustainability information especially on environmental. However, agency theory alone may not be strong enough to support the reason for companies to voluntarily disclose environmental disclosure.

Signaling theory also supports the problem of information asymmetry in the aspect of financial information in the annual reports (e.g., Dainelli *et al.*, 2013; Gantyowati and Nugraheni, 2014). Dainelli et al. (2013) finds that more information given to the stakeholders in the annual reports reduces information asymmetry. Thus, the management will also provide non-financial information (i.e. social and environmental disclosure) as this will enhance the social awareness, credibility and the success of the firm (Gantyowati and Nugraheni, 2014). In other words, social and environmental disclosure acts as a tool to signal the shareholders and the market of the company's performance.

Other than the above theories, this study also uses the *taqwa* paradigm framework to support the explanation of environmental reporting disclosures. The *taqwa* paradigm, which is introduced by Dusuki (2008), is based on the concept of *khalifah* (vicegerent) and *taqwa* (piety) (Bahari and Yusuf, 2014). According to Dusuki (2008), *khalifah* means humankind that represents Allah on earth and are obliged to manage earth according to the *shari'ah* principles. Whereas, *taqwa* means being able to understand their (*khalifah*) role to manage and develop the world according to *shari'ah* (Islamic principles).

Dusuki (2008) believes that the *taqwa* paradigm provides a number of values for shaping social life and understanding the human's relationship with God (Allah), with other human kind and with the natural environment in accordance to *shari'ah* principles. These values consist of four major points which are human dignity, free will, equality and rights, and trust and responsibility (Platonova, 2013). Thus, it is argued that when a company incorporate these major points in their top management personnel, the company can develop better corporate governance and CSR practices. Hence, the paradigm posits that when a company practises the *taqwa* paradigm in their business activities, the company will naturally operate in a good and socially responsible manner despite their financial consequences (Dusuki, 2008).

Meanwhile, researches also find that legitimacy theory can also explain the disclosures of environmental information (Nik Ahmad and Sulaiman, 2004). According to Doupnik and Perera (2015), "legitimacy theory posits that social reporting is a means to deal with the firm's exposure to political, economic, and social pressures." Thus, companies disclose more voluntary information as their social responsibility acts to legitimize their business activities and performance. "This in turn is based on the notion of stewardship, defined as the accountability of management of an organization for the resources entrusted to it" (Doupnik and Perera, 2015).

3.2.1 Determinants

This study examines two broad categories of determinants of environmental reporting disclosures namely (a) corporate governance characteristics and (b) corporate characteristics. The determinants include the corporate governance characteristics (i.e., board size, board independence, CEO duality, and board diversity) and firm characteristics (i.e., company size, profitability, and free cash flow) (e.g., Buniamin *et al.*, 2011; Abdul Razak and Mustapha, 2013). In accordance to MCCG 2012, the study focuses on board which are (1) board size and (2) board independence and (3) board diversity. This is in line with key amendments made in MCCG 2012 that highlights the composition and the independence of the directors under Principle 2 (Strengthen Composition) and Principle 3 (Reinforce Independence) (MCCG 2012).

This study only considers two forms of board diversity which are diversity in gender and religion. This study assumes that religion of the directors, whether Muslim or non-Muslim can significantly influence environmental reporting disclosure. To the author knowledge there is a limited study that examines the influence of religion (as board diversity attributes) on environmental reporting disclosure. Examining this factor is in line with Malaysia, positioning to become the Global Halal Hub where Malaysia is now the leading global halal hub with an annual export value of RM35.4 billion for halal products, which contributes approximately 5.1% of the total exports for the country (Malaysia - The World's Leading Halal Hub, 2015). As for board gender, it is expected that director's gender whether male or female would have a significant influence on environmental reporting disclosure.

Following prior researches (e.g., Buniamin *et al.*, 2011; Abdul Razak and Mustapha, 2013), the study includes the corporate characteristics as one of the independent variables that contribute to company's performances which are (1) company size and (2) profitability, and (3) free cash flow. Researches finds that company size and profitability would normally have significant influence on environmental reporting disclosure (e.g., Salehuddin and Fadzil, 2013; Bhattacharya, 2014; Sulaiman *et al.*, 2014). This study includes free cash flow as one of the corporate characteristics to examine whether cash flow available is able to finance the disclosure initiatives (Dittmar and Mahrt-Smith, 2007). The study will use growth as its control variable to examine the possibility for future investments (Salehuddin and Fadzil, 2013).

Based on past literatures, the study developed a research framework on the determinants of environmental reporting using the corporate governance characteristics and corporate characteristics as presented in Figure 3.1.

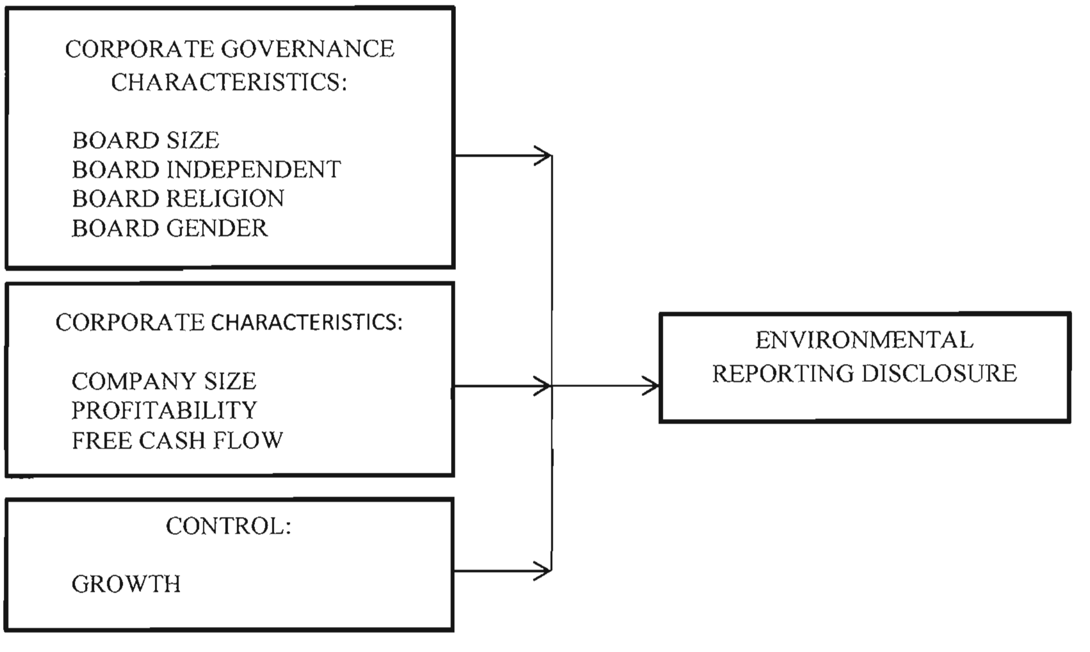

Figure 3.1
Research Framework

3.3 Hypotheses Development

Referring from the selected independent variables in the latter section, the study develops seven hypotheses to support the research objectives. The detail of each hypothesis is explained in the subsequent section.

3.3.1 Board Size

Janggu *et al.* (2014) find that there is a positive relationship between board size and the sustainability reporting. Similarly, a study by Buniamin *et al.* (2011) finds that board size has significant influence on ER disclosure. On the same note, it is argued that board size would have significant influence on ER disclosure practises. Due to these (i.e., Buniamin et al., 2011; Janggu et al., 2014) evidence of literatures as to the influence on board size on environmental reporting, this study hypothesizes that there is positive significant relationship between board size and the existence of environmental reporting.

H_1: Company with more board members are more likely to have positive significant influence on environmental reporting disclosures.

3.3.2 Board Independence

Several studies (e.g., Htay, Ab.Rashid, Adnan and Meera, 2012; Salehuddin and Fadzil, 2013) find that board of directors independence is very important in the determining the level of ER disclosures. Thus, it is argued that independent directors would influence other directors to voluntary disclose more information of the company to the stakeholders. As such, this study hypothesised that there is a significant positive relationship between board independence and the existence of environmental reporting disclosure.

H_2: Company with more independent board members are more likely to have positive significant influence on environmental reporting disclosures.

3.3.3 Board Diversity (Religion)

A study by Salehuddin and Fadzil (2013) examines the relationship between Muslim chairman and corporate environmental responsibility disclosure of the shariah-compliant listed companies in Malaysia. They find significant result for the Muslim chairman when using the multiple regression analysis. However, Arshad, Abdul Fatah and Othman (2014) find that there is no significant relationship between the percentages of Muslim board members to the extent of environmental disclosure.

Though there are inconclusive findings from previous studies regarding the relationship between Muslim directors and environmental reporting, the theoretical *taqwa* paradigm framework suggests that there should be positive relationship between environmental reporting disclosures and Muslim directors. Thus, this study hypothesized that Muslim directors who practice *taqwa* paradigm can significantly influence the level environmental reporting disclosures in company's annual reports.

H_3: Company with more Muslim board members are more likely to have positive influence on ER disclosures.

3.3.4 Board Diversity (Gender)

From the literature, it seems that women directors can be influential in affecting more ER disclosure on company financial reports (Rao *et al.*, 2012; Handajani *et al.*, 2014; and Akpan and Amran, 2014). Therefore it is argued that the more women directors sit on the board of directors, the more likely to have positive influence on ER disclosure. Hence, this study hypothesise that the company that have more women as their board members are more likely to have positive influence on environmental reporting disclosures.

H_4: Company with more women board members are more likely to have positive influence on ER disclosures.

3.3.5 Company Size

Based on previous studies in Malaysia, the findings suggests that larger companies may have larger monetary capabilities to cover the costs of reporting environmental information in the annual reports (Buniamin *et al.*, 2011 and Sulaiman *et al.*, 2014). In addition, bigger companies disclose more environmental information to reduce public demand. Thus, this study hypothesises that there is a significant relationship between company size and the existence of environmental reporting.

H_5: Larger Companies are more likely to have positive influence on ER disclosures.

3.3.6 Profitability

Based on literatures in section 2.4, a higher profitable company would have more positive influence on environmental reporting (e.g., Sulaiman *et al.*, 2014 and Ong *et al.*, 2014). This indicates that a profitable company has larger resources to provide quality disclosures of their environmental information. Hence, this study hypothesised that there is a significant relationship between profitability and the existence of environmental reporting.

H_6: Profitable Companies are more likely to have positive influence on ER disclosures.

3.3.7 Free Cash flow

Free cash flow theory assumes that companies having extra cash flow will have more severe agency costs. Thus to reduce the agency costs, the company are willing to provide more disclosure. Therefore this study hypothesises that as the company have more free cash flows, then the more the company wants to disclose environmental information.

H_7: Companies with larger free cash flows are more likely to disclose ER.

3.4 Research Design

The research design consists of three sections which first explain the sample and data collection. Secondly, the study explains on the sources of data for this study which is by content analysis on the annual reports. The third section will elaborate the definition and measurement for all the variables involved in the study.

3.4.1 Sample and Data Collection

The study was carried out based on samples of listed industrial products sector in Bursa Malaysia. Industrial Products companies were chosen because Industrial sector was considered as one of environment-sensitive industry (Deegan and Gordon, 1996). There were 233 companies under the listed industrial products sector. 100 sampled companies were selected randomly from the population using the random number generator available in Microsoft Excel in accordance to Buniamin *et al.* (2011). The number of samples chosen was consistent with the minimum sample size table that was suggested by Krejcie and Morgan (1970).

The study was conducted on the basis of secondary data being collected from annual reports of the selected companies and DataStream for the year 2013. This period was chosen in conjunction with the introduction of MCCG 2012 as it portrays whether the companies takes serious action when concerning enhancing good governance following the MCCG 2012. The list of the 100 selected sample companies is provided in Appendix 1.

3.4.2 Content Analysis

The data was gathered from the annual reports of the year 2013 and the Data Stream. This study employed content analysis method to analyse the data from annual reports as it was the most accessible form of information concerning the disclosure of environmental information (Neuendurf, 2002). Previous studies (e.g., Smith, Yahya, and Amiruddin, 2007; Buniamin, 2010) prefer this method to measure environmental reporting disclosures (Yusoff and Darus, 2014).

This study used content analysis as it has been regarded as the most suitable method to explore and extract both the environmental information and financial information in the annual reports (Milne and Adler, 1999). The procedure of the analysis consists of two procedures. First, the annual reports were critically reviewed for any existence of environmental information via the environmental reporting index. Second, the study assigned disclosure score based on the information identified in the earlier step. Other financial information was extracted using the available information in the annual reports for the use of calculating the independent and control variables.

3.4.3 Definition and Measurement of Variables

Basically, this study looks into testing three parts of variables namely; (1) one dependant variable, (2) seven independent variables, and (3) one control variable. A disclosure index was used to measure the dependant variable derived from combination of a proposed guideline and literature reviews.

a) Dependent Variable

The dependant variable for this study is the extent of environmental reporting information. The variable was measured by identifying any information related to the environment using an environmental reporting index. The environmental reporting index (ERI) was used in this study is developed based on the index employed by Yusoff and Darus (2014) that was conducted in Malaysia.

The ERI was also constructed based on the 34 items of environmental indicators. The index was developed using the guideline by the Global Reporting Initiative (GRI) (latest version entitled 'GRI: G4' and published in 2013). Table 3.1 presents the final list of 19 items that were included in the environmental reporting disclosure. These items considered all the 12 categories in GRI: G4 which were materials, energy, water, biodiversity, emissions, effluents and waste, products and services, compliance, transport, supplier environmental assessment, environmental grievance mechanisms and overall aspects of environmental. The ERI was extracted from the annual reports of the sampled companies.

The disclosure score is calculated using a disclosure score which is presented in Table 3.2. A score of '2' was given for items that were reported in quantitative or financial terms. A score of '1' was given for items that were reported in qualitative disclosure. A score of '1' was also given for items that were reported in a form of diagrams or pictures. A score of '0' was given for items that were not reported. The index score was adapted from prior research by Sulaiman, Abdullah and Fatima (2014). In theory, a company could score up to a maximum score of 38 (19 X 2) and the total score was presented in percentage from the computation of the ratio of actual scores given divided by the maximum score.

Table 3.1
Environmental Reporting Index

No	Environmental reporting index
1	Any mention of promoting sustainability
2	Company's Statement of corporate commitment to environmental protection
3	Environmental Policy Formulation
4	Environmental Management System (ISO 14001)
5	Efficiency of energy and water consumption
6	Trees planting or replanting programmes and initiatives
7	Protection and preservation of natural environment in areas of high biodiversity
8	Sustainable waste management
9	Reduce greenhouse gas emissions
10	Incorporate pollution prevention practices (e.g. reduce, recycle and reuse)
11	Green/Safe Products and Services
12	Use of environmental alternative technology in managing business production
13	Fines/lawsuits/noncompliance incidents related to environment
14	Compliance to any laws and regulations related to environmental
15	Corporate fleet to use eco-friendly vehicle
16	Networking with 'green' stakeholder groups
17	Environmental budgets/expenditures
18	Environmental Education for employees and community
19	Environmental Awards/Achievements

Sources: Adapted from Yusoff and Darus (2014) and Global Reporting Initiative (GRI: G4) (2013)

Table 3.2
Disclosure Score for the Environmental Reporting Index

Score	Description of table format
0	items that are not disclosed
1	items that are disclosed in qualitative
1	items that are disclosed in diagram or picture
2	items that are disclosed in quantitative or financial

Sources: Adapted from Sulaiman, Abdullah and Fatima (2014)

b) Independent Variables

This study follows the measurement of both independent variables and control variables that was used by previous researches (Buniamin, 2010; Ionel-Alin *et al.*, 2012; Abdul Razak and

Mustapha, 2013 and Janggu *et al.*, 2014). These explanatory variables were calculated in order to test the hypotheses constructed earlier. The information for these variables was taken from each company's annual reports for the year 2013.

Board size was measured using total number of members on the board of directors (*n*). A larger amount of directors may represent more effective governance (Buniamin, 2010). Board independence was measured using percentage of independent non-executive directors which was divided by total number of directors. In accordance to Practise Notes 3 of MCCG (2012), a company should acquire directors who were independence from both the management and the shareholders (Buniamin, 2010). Both board diversities was measured by percentages which were (i) for religion, the total Muslim board members divided by total number of directors, and (ii) for female, the total women directors divided by total number of directors. The measurements were based on previous studies by Haniffa and Cooke (2002) and Arshad *et al.* (2014).

Company size was measured using Natural log of company's total assets. This is because the information on total assets was easily access from the annual reports. The size of a company have several measurable instruments. Company size can be measured using total assets (i.e. Buniamin, 2010; Buniamin *et al.*, 2011; Joshi *et al.*, 2011; Salehuddin and Fadzil, 2013; Sulaiman *et al.*, 2014) or natural log of company's total asset (i.e. Htay *et al.*, 2012; Abdul Razak and Mustapha, 2013; Bhattacharyya, 2014). Some researchers used total sales (i.e. Galani *et al.*, 2011) and market capitalization (i.e. Smith *et al.*, 2007; Setyorini and Ishak, 2012).

Research done by Makori (2013) examines the association between firm's profitability and environmental reporting in India. In his research, the firm's profitability was measured by four measurements namely; (1) return on capital employed, (2) net profit margin, (3) dividend per share and (4) earnings per share. All of the measurements were found to have significant relationship on environmental reporting. Meanwhile measurements for profitability were usually, return on asset (i.e. Smith *et al.*, 2007; Ong *et al.*, 2014; Sulaiman *et al.*, 2014), return on equity (i.e. Smith *et al.*, 2007; Ong *et al.*, 2014) and earnings per share (i.e. Alarussi, *et al.*, 2009; Ong *et al.*, 2014) for the profitability's measurement. The variable for profitability for this study used Return on Assets as its measurement.

This study used EBITDA per share for the measurement of free cash flow variable. According to Gitman and Zutter (2014), free cash flow is considered to be excess cash flow that the company can use as it deems most beneficial. EBITDA is one of the favourable measurements that investors use for free cash flow (Gitman and Zutter, 2014) as EBITDA measures pre-tax cash flow before the firm makes any investment to either maintain its asset or for future growth (Opler and Titmen, 1993).

c) Control Variable

This study used one control variables namely growth. Following previous studies (e.g., Mustafa, Abdul Latif, and Taliyang, 2011; Frias-Aceituno, Rodrigeuz, and Garcia-Sanchez, 2012), this study uses growth as measured by Market to book value (MTBV). Frias-Aceituno *et al.* (2012) examines the influence of certain characteristics of Board of Directors against the level of information disclosed by leading non-financial multinational companies.

Frias-Aceituno *et al.* (2012) used growth opportunities as one of their control variables to counter the problem of bias in their result. They find that companies with higher market to book value are expected to disclose more information to stakeholders in order to curb information asymmetry. Similarly, Mustafa *et al.* (2011) also used market to book value as proxy to company's growth. They find significant influence between company's growths (using MTBV) against the extent level of expropriation of minority shareholders' rights in Malaysian context.

Table 3.3
Measurement of variables

Variable	Measurement	Hypothesis
Board Size	Number of board members (n)	H_1
Board Composition	Number of independent non-executive directors divided by total number of directors on board (%)	H_2
Board Diversity: Religion	Percentage of Muslim directors on board	H_3
Board Diversity: Gender	Percentage of female directors on board	H_4
Company Size	Natural log to Total Assets (RM)	H_5
Profitability	ROA (RM)	H_6
Free cash flow	EBITDA per share	H_7
Growth	Market to book value	-

3.5 Data Analysis

The data for this study is analysed and explained in three (3) parts which are (i) descriptive statistics analysis, (ii) preliminary data analysis, and (iii) hypotheses testing. Statistics of Analysis Data (Stata), version 12 is used for hypotheses testing. The details of all the analysis will be explained in the subsequent sections of this chapter.

3.5.1 Descriptive Statistics Analysis

The descriptive statistics analysis is used to describe and summarize the data of the study. The analysis normally describes all the variables in measurements such as mean, standard deviation, maximum and minimum count (Hair, Black, Babin and Anderson, 2010). Thus, the first analysis is to describe the basic features of all the data that was gathered which are board size, board independence, board diversity (religion), board diversity (gender), company size, profitability, free cash flow and growth.

3.5.2 Preliminary Data Analysis

In order to test the hypotheses of this study, a preliminary data analysis is constructed in order to detect any missing values. The reason for this analysis is to avoid any misinterpretation of data and to determine the appropriate technique to use for analysing the data. The preliminary data analysis for this study includes analyses in examining for cleaning and coding of data, heteroskedasticity, multicollinearity and correlation analysis. Normality tests for all the variables were not done in this study as the sample size is reasonably large Gujarati (2004, p. 125) explains that when the sample is large amounting to 100 or more observations, normality is assumed and thus the normality testing can be relaxed.

Data cleaning is the first step when doing preliminary data analysis. It involves in any detection of missing data or values. According to Hair *et al.* (2010), a researcher must detect any missing data as it may be misleading when determining the suitable technique to examine and interpret the data. After the cleaning of data, the coding process can begin to convert the format and data in Microsoft Excel to suit with the analysis procedure in STATA.

The next analysis in the preliminary data analysis is to check for heteroskedasticity. Hair *et al.* (2010) defines heteroskedasticity as a situation where the variance of the dependent variables in a dependant relationship is concentrated in only a limited range of the independent variables. This problem can be detected by using heteroskedasticity tests such as White's General Heteroskedasticity Tests and Beuch-Pagan Test or Cook-Weisberg Test (Hair *et al.*, 2010). The rule of thumb for heteroskedasticity is that the probability of chi2 must not exceed 0.05 or it will develop the problem of heteroskedasticity (Coakes, Steed and Ong, 2010).

Meanwhile, according to Hair *et al.* (2010), multicollinearity means the extent where a variable can be explained by other variables in the analysis. To test for multicollinearity, researches normally use tests such as Pearson's Correlation Matrix and Variance Inflated Factor (VIF) (e.g., Gujarati, 2003; Hair et.al, 2010). According to the rule of thumb for Pearson's correlation, the correlation should not exceed 0.75 or there will be a problem of multicollinearity (Cooper and Schindler, 2006). Thus, to support the correlation analysis, this study uses VIF where the rule of thumb posits that any VIF that is more than 10 and tolerance value lower than 0.10, indicates a problem of multicollinearity (Chatterjee, Hadi, and Price, 2000).

Lastly, this study continues to conduct the hypotheses testing using regression analysis. The statistical method is conducted using four regression model which are (i) Ordinary Least Square (OLS) Regression (also known as Multiple Linear Regression (MLR)) (ii) OLS with robust standard error (OLS-Robust), (iii) Tobit Regression (also known as Censored Regression), and (iv) Tobit with robust standard error (Tobit-Robust). This study employs OLS regression together with Tobit regression because the environmental reporting score index (dependent variable) is censored with zero observations (Cormier and Magnan, 1999). This is due to observations where some companies not disclosing any environmental information in their annual reports. Thus, when the variable is censored, Cormier and Magnan (1999) suggests Tobit to support OLS that may provide inconsistent estimation of the model.

Following previous studies (e.g., Liu, Lu, Kolpin and Meeker, 1997; Mustafa *et al.*, 2011) this study conducts the four regression models according to stepwise regression models. As explained by Nathans, Oswald and Nimon (2012), this study employs stepwise regression to determine the most significance variables of the regression model. The stepwise regression is conducted using the 'backward elimination method' which is by (i) the regression of all variables according to the main regression model, (ii) the variables that are not contributing significantly are extracted one by one (using the p-value cut-off point) until the regression finds the variables that result significantly to the fitting model (Liu *et al.*, 1997).

This study follows Bursac, Gauss, Williams and Hosmer (2008), where they use Wald's Test for the stepwise regression. The first step is to test all four regressions for the full model. Then, for the second step, the study selects the cutting off point for removing the variables that are not significant that is at $p > 0.25$ level. The last step of the regression analysis is by removing more the not significant variables when $p > 0.10$ level. In the end, the result identifies the significance variables for this study. All four models are explained in Chapter 4 according to the specific models.

The regression analysis is conducted to determine the influence between board size, board independence, board diversity (religion), board diversity (gender), company size, profitability, free cash flow and growth with the extent of environmental reporting disclosures. The regression model is as follows:

$$ER = \alpha + \beta_1\, BSize + \beta_2\, BInd + \beta_3\, BMuslim + \beta_4\, BFemale + \beta_5\, CSize + \beta_6\, Profit + \beta_7\, FCF + \varepsilon$$

Where:

ER	=	Environmental reporting score measured the disclosure index score
BSize	=	Total number of directors on board
Bind	=	Number of independent non-executive directors scaled by the total number of directors on board
BMuslim	=	Percentage of Muslim directors on board
BFemale	=	Percentage of female directors on board
CSize	=	Natural log of total assets
Profit	=	Return on Assets
FCF	=	EBITDA per share
α	=	Constant
ε	=	The error term

3.6 Chapter Summary

This chapter presents the design of the study. This study implements the examination on secondary data that is extracted from annual reports and DataStream. The study uses 100 sampled companies that are selected randomly of the population from the industrial product which is listed on Bursa Malaysia in 2013. This study examines the influence of seven independent variables against one dependent variable which is the environmental reporting disclosure. The dependent variable which is the extent of environmental reporting disclosure is captured using the score index of the ERI taken from the environmental and sustainability index guidelines such as the GRI: G4 and indexes that is produced by Yusoff and Darus (2014).

The independent variables are board size (BSIZE), measured by number of board members; board independence (BIND), measured by percentage of independence non-executive directors; board diversity of religion (BMUSLIM), measured by percentage of Muslim directors; board diversity of gender (BFEMALE), measured by percentage of Women directors; company size (CSIZE), measured by natural log of total assets; profitability (PROFIT), measured by return on assets (ROA); and free cash flow (FCF), measured by earnings before tax, interest, depreciation and amortisation per share (EBITDAPERS). Growth opportunity (GROWTH) is used as the control variable and is measured by market to book value (MTBV).

The data analysis involves the descriptive statistics analysis, preliminary analysis and hypotheses testing (regression analysis). This study conducts the analysis using STATA software version 12. The preliminary analysis includes data cleaning, heteroskedasticity test, and multicollinearity test which uses both correlation analysis and VIF analysis. The regression analysis uses four regression models of OLS regression, OLS-Robust, Tobit regression and Tobit-Robust. All of the regressions are conducted using step-wise regression to test for hypotheses of the study.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Introduction

To analyse the hypotheses highlighted in this research, this chapter presents the results of the analysis of secondary data collected from the annual reports of the selected industrial products listed companies in Malaysia. This chapter intends to explain the objective of this study which is to examine the determinants that may have positive influence on the ER practices.

The presentations of the results in this chapter are divided into three parts. First, this chapter presents a descriptive statistics analysis regarding the dependent variable, independent variables, and control variable. Secondly, the study presents the findings of the preliminary analysis to do data cleaning and check for heteroskedasticity and multicollinearity problems. Lastly, the chapter presents the regression analysis results utilised in testing the hypotheses initially postulated.

4.2 Descriptive Statistics Analysis

Sample companies are from 100 Industrial Product listed companies in Bursa Malaysia which are randomly selected using computer generated number. Table 4.1 shows the descriptive statistics of all variables. The mean for *ER* (ERSCORE) by the sample companies is 0.2124 and the standard deviation is 0.1518. The maximum level of SCORE is 53 percent and the minimum level is zero percent. From the observation, there are 12 companies have zero per cent disclosure on ER in their annual reports. For the independent variables, the mean or average for board size (BSIZE) of the sampled companies is 7.2. This shows that there is a reasonable amount of board size in the selected companies which is consistent with Jensen and Ruback (1983) who suggested the number of board size of not more than seven or eight members can ensure the effectiveness of a company's performance.

Table 4.1
Descriptive Statistics of Variables for the Sample Companies (N = 100)

	MEAN	MEDIAN	STANDARD DEVIATION	MAX	MIN
ERSCORE	0.2124	0.2237	0.1518	0.5263	0
BSIZE	7.2000	7.0000	1.7800	12.0000	4
BIND	0.4615	0.4444	1.0700	0.7500	0
BMUSLIM	0.2594	0.2111	0.2219	1.0000	0
BFEMALE	0.0966	0	0.1321	0.5000	0
CSIZE ('000)	1, 307,656	210,496	4,602,032	41,848,210	27,553
PROFIT	2.51	3.34	12.27	34.35	(92.45)
FCF	0.0799	0.0013	0.4200	3.8431	(0.1408)
GROWTH	1.0610	0.6950	0.9797	5.3600	(0.1100)

For board independence non-executive (BIND), the mean value is 0.4615 which shows the number of independent non-executive directors on board of Industrial Product companies is just on average. This indicate that most of the companies satisfy the minimum requirement prescribed in MCCG 2012 which requires that at least 1/3 or 33 percent of members on BOD should be independent. For board diversity on religion, (BMUSLIM), the mean is 0.2594 with the standard deviation of 0.2219. This indicates that nearly 26 percent of the sampled companies have Muslim board members in the management. For board diversity of gender (BFEMALE), the mean level is 0.0966 which indicates that only ten percent of the board members from the industrial product industry are occupied by Women directors with the standard deviation of 0.1321.

On average the sample companies have a total asset of RM1,307,656,000 with a maximum value of RM41,848,210,000 and minimum value of RM27,553,000. The mean for profitability (PROFIT) is 2.51 with the maximum ratio at 34.35 and the minimum ratio at -92.45. On average, sample firms earned 2.78 percent on every RM1.00 invested in Total Assets. The standard deviation for profitability at 12.39 shows a large difference of profitability among sampled companies. For free cash flow (FCF), the mean is 0.0799 with the standard deviation at 0.42. For growth (GROWTH), the mean value is 1.0610.

4.3 Preliminary Analysis

The study gathers data for 100 sampled companies from the industrial product listed in Bursa Malaysia for the year 2013. The data is gathered from two different sources and is divided into three different categories as presented in Table 4.2 and Table 4.3.

Referring to Table 4.2 and 4.3, the study finds no missing values in the process of data collection. The data taken from the annual reports and DataStream are extracted and recorded in Microsoft Excel. These data are then merged into one working sheet of Microsoft Excel in accordance to the suitable format to be transferred or imported to STATA (version 12).

Table 4.2:
Data cleaning taken from annual report

Types of Data	Remarks
ER Disclosure (index score)	No missing values
Corporate Governance Characteristics (Independent Variables): i. Board Size (BSIZE) data; ii. Board Independence (BIND) data; iii. Board Diversity (Religion) (BMUSLIM) data; iv. Board Diversity (Gender) (BFEMALE) data	No missing values

Source: Annual Reports of Year 2013 (Listed companies in Industrial Products Industry)

Table 4.3:
Data cleaning taken from DataStream

Types of Data	Remarks
Corporate Characteristics (Independent Variables): i. Company Size (CSIZE) data; ii. Profitability (PROFIT) data; iii. Free Cash Flow (FCF) data;	No missing values
Control Variable: Growth Opportunity (GROWTH) data	No missing values

Source: DataStream of Year 2013 (Industrial Products Industry)

To test the assumptions of OLS model, the study runs the heteroskedasticity test. This study utilises the Breusch-Pagan Test to check for any heteroskedasticity problem. Statistical results indicate that chi2 is more than 0.05 at the value of 0.0846. Following Coakes *et al.* (2010), the probability of chi2 must not exceed 0.05 or it will develop the problem of heteroskedasticity. This means that there is less problem of heteroskedasticity.

As explained in Section 3.4.1, the study uses correlation analysis and VIF to test for multicollinearity problem. The first test to detect multicollinearity is by utilizing the VIF and tolerance value. According to Chatterjee *et al.* (2000), any value of VIF that is more than 10 with tolerance value of less than 0.10 indicates a multicollinearity problem. Referring to Table 4.4, the result shows that the VIF score for all the variables are less than 10. The tolerance value of the variables is more than 0.10. This indicates that there is no multicollinearity problem in the model.

A Pearson's correlation is used to assess the relationship between the ER score with both the independent variables and control variables. The multicollinearity value for correlation should be less than 0.75 (Cooper and Schindler, 2006). As seen in Table 4.5, board diversity-religion (BMUSLIM) and company size (CSIZE) are positively correlated with ER disclosure of Malaysians Industrial Product Listed Companies. In contrast, other variables which are board size (BSIZE), board independence (BIND), board diversity-gender (BFEMALE), profitability (PROFIT), free cash flow (FCF), and growth opportunity (GROWTH) have no significant relationship with the ER disclosure.

The correlation results show that BMUSLIM is positively associated with ER disclosure with the value of 0.195 and at a significant level of one percent. This indicates that the level of ER disclosure will increase if there is an increase percentage of a Muslim director in the board members of a company. CSIZE is positively correlated with ER disclosure at a significant level of five percent with a value of 0.407. This positive correlation shows that the larger the size of a company, the more disclosure on the ER. Overall, the correlation statistics shows that none of the variables have a coefficient value of more than 0.90. Thus, this indicates that there is no serious problem of multicollinearity in the model (Hair *et al.*, 2010).

Table 4.4
Test for multicollinearity – VIF

Variable	**VIF**	**1/VIF**
BSIZE	1.24	0.808388
BIND	1.31	0.762240
BMUSLIM	1.27	0.788090
BFEMALE	1.03	0.973116
CSIZE	1.24	0.806404
PROFIT	1.20	0.832185
FCF	1.12	0.896678
GROWTH	1.19	0.843337
Mean VIF	1.20	

Note. BSIZE = board size, BIND = board independence, BMUSLIM=board diversity (religion), BFEMALE = board diversity (gender), CSIZE = company size, PROFIT = profitability, FCF = free cash flow, GROWTH = growth.

Table 4.5

Test for multicollinearity - Correlation Analysis (Pearson's Correlation Matrix)

	ERSCORE	BSIZE	BIND	BMUSLIM	BFEMALE	CSIZE	PROFIT	FCF	GROWTH
ERSCORE	1								
	100								
BSIZE	0.128	1							
	0.102								
	100	100							
BIND	0.063	-.303**	1						
	0.268	0.001							
	100	100	100						
BMUSLIM	.195*	0.134	.272**	1					
	0.026	0.092	0.003						
	100	100	100	100					
BFEMALE	-0.007	0.103	-0.127	-0.049	1				
	0.474	0.154	0.104	0.313					
	100	100	100	100	100				
CSIZE	.407**	.225*	-0.01	.268**	0.016	1			
	0	0.012	0.461	0.003	0.436				
	100	100	100	100	100	100			
PROFIT	-0.134	-0.056	-.235**	-.228*	0.014	0.155	1		
	0.092	0.289	0.009	0.011	0.443	0.062			
	100	100	100	100	100	100	100		
FCF	-0.1	-0.008	-0.059	.179*	0.066	-0.029	-0.038	1	
	0.161	0.469	0.28	0.037	0.256	0.387	0.353		
	100	100	100	100	100	100	100	100	
GROWTH	-0.026	0.13	0.019	0.001	0.01	.214*	.279**	-0.072	1
	0.397	0.098	0.425	0.497	0.46	0.016	0.002	0.239	
	100	100	100	100	100	100	100	100	100

Note. * = $p < .01$, ** = $p < .05$

4.4 Regression Analysis

The propose hypotheses which are inclusive of seven hypotheses are tested in this section by using the stepwise OLS, OLS with robust standard errors (OLS-Robust), Tobit and Tobit with robust standard errors (Tobit-Robust). The regressions employ a one-tailed test. The procedure for step-wise regression, as explained in Section 3.4.2, is divided into three (3) steps. The steps are shown in Table 4.6 to 4.9 according to the respective regression models.

4.4.1 OLS Regression Analysis

Table 4.6 shows the result for stepwise OLS regression using backward elimination method. For the first step (Step 1) of regression, the full model is regressed. The result finds four positive significant variables which are CSIZE, PROFIT, FCF and GROWTH. CSIZE is significant at $p < .01$ level while FCF is significant at $p < .05$ level. The PROFIT and GROWTH variables are both significant at $p < .10$ level. In the second step (Step 2), the study eliminates two non-significant variables with p-value at $p \geq .25$ which are BIND and BFEMALE. The re-estimation of Step 2 in Table 4.6 shows that there is an additional significant result for the model which is BMUSLIM. Thus, there are five positive significant variables namely BMUSLIM, CSIZE, PROFIT, FCF and GROWTH. There are three variables that are significantly positive at $p < .10$ (i.e., BMUSLIM, PROFIT and GROWTH) while FCF is significant at $p < .05$ and CSIZE is significant at $p < .01$.

Finally, in Step 3, the study eliminates two more non-significant variables as their p-value is at $p \geq .10$. The result shows similar pattern of the number of significant variables as in Step 2. However, for the significant level, PROFIT reveals differently from Step 2 where it is positively significant at p < *.05* at Step 3. As the regression analysis progress from the Step 1 to Step 3, R-squared (R^2) decreases as follows: (i.e., R^2 = .1843 (full model), = .1809 (step 2), and = .1731 (step 3)). Thus, the value obtained for R^2 shows that the ER practices can be explained by the independent variables (i.e., BSIZE, BIND, BMUSLIM, BFEMALE, CSIZE, PROFIT, and FCF) by about 18 percent. In all, for stepwise OLS regression, the study finds five positively significant variables against the ER disclosure which are BMUSLIM, CSIZE, PROFIT, FCF, and GROWTH.

Table 4.6
OLS Regression Results (Standard Error)

OLS	Step 1 Full Model		Step 2 Delete p ≥ 0.25 in Step 1		Step 3 Delete p ≥ 0.1 in Step 2	
ERSCORE	**Coef.**	**P > t**	**Coef.**	**P > t**	**Coef.**	**P > t**
BSIZE	0.0099	0.138	0.0078	0.175	-	-
BIND	0.0716	0.278	-	-	-	-
BMUSLIM	0.0917	0.106	0.1045	0.067*	0.1084	0.06*
BFEMALE	-0.0141	0.449	-	-	-	-
CSIZE	0.0292	0.005***	0.0289	0.005***	0.0303	0.003***
PROFIT	-0.0018	0.079*	-0.0020	0.057*	-0.0021	0.047**
FCF	-0.0697	0.029**	-0.0683	0.030**	-0.0640	0.037**
GROWTH	-0.0232	0.075*	-0.0220	0.082*	-0.0211	0.091*
_cons	-0.4493	0.023	-0.4003	0.027	-0.3744	0.035
R-squared	0.1843		0.1809		0.1731	
Adjusted R-squared	0.1126		0.1281		0.1291	

Note. BSIZE = board size, BIND = board independence, BMUSLIM=board diversity (religion), BFEMALE = board diversity (gender), CSIZE = company size, PROFIT = profitability, FCF = free cash flow, GROWTH = growth.

* = *p* < *.10*, ** = *p* < *.05*, *** = *p* < *.01*.

The next regression analysis is by using OLS with robust standard error (OLS-Robust) that is presented in Table 4.7. According to Hair *et al.* (2010), robust regression provides an alternative to least squares regression as it presents better regression coefficient estimates when outliers are present in the data. The step-wise OLS-Robust regression in the study is conducted similarly as in OLS regression.

Referring to Table 4.7, the study finds nearly similar amount of significant variables as in stepwise OLS regression when estimating using stepwise OLS-Robust regression. In Step 1 of OLS-Robust, the result finds five positive significant variables which are BMUSLIM, CSIZE, PROFIT, FCF and GROWTH. The probability level in Step 1 of OLS-Robust differs from OLS where CSIZE and FCF are significant at $p < .01$ level while PROFIT is significant at $p < .05$ level. BMUSLIM and GROWTH variables are both significant at $p < .10$ level.

The procedure in Step 2 of this robust regression follows the latter regression. The re-estimation of Step 2 in Table 4.7 shows similar positive significant variables as in Step 1. In Step 2, CSIZE, PROFIT and FCF are statistically significant at $p < .01$, while BMUSLIM is significant at $p < .05$ and GROWTH is significant at $p < .10$.

Finally, in Step 3, the study only derives four significant variables namely BMUSLIM, CSIZE, PROFIT, and FCF. The probability level, BMUSLIM is significant at $p < .05$ and the other three are significant at $p < .01$. The value obtained for R^2 for OLS-Robust is consistent with standard OLS regression as shown in Table 4.7. Overall, the result finds four significant variables for stepwise OLS-Robust regression namely BMUSLIM, CSIZE, PROFIT, and FCF. Concluding all the results in Table 4.6 and 4.7, the variables that are not significant are BSIZE, BIND, and BFEMALE.

Table 4.7
OLS with Robust Standard Error (OLS-Robust) Regression Results

OLS-ROBUST	Step 1		Step 2		Step 3	
	Full Model		Delete p ≥ 0.25 in Step 1		Delete p ≥ 0.1 in Step 2	
ERSCORE	**Coef.**	**P > t**	**Coef.**	**P > t**	**Coef.**	**P > t**
BSIZE	0.0099	0.111	0.0078	0.143	-	-
BIND	0.0716	0.277	-	-	-	-
BMUSLIM	0.0917	0.092*	0.1045	0.054**	0.1084	0.048**
BFEMALE	-0.0141	0.448	-	-	-	-
CSIZE	0.0292	0.003***	0.0289	0.003***	0.0303	0.003***
PROFIT	-0.0018	0.016**	-0.0020	0.009***	-0.0021	0.006***
FCF	-0.0697	0.000***	-0.0683	0.001***	-0.0640	0.001***
GROWTH	-0.0232	0.091*	-0.0220	0.095*	-0.0211	0.108
_cons	-0.4493	0.024	-0.4003	0.025	-0.3744	0.033
R-squared	0.1843		0.1809		0.1731	

Note. BSIZE = board size, BIND = board independence, BMUSLIM=board diversity (religion), BFEMALE = board diversity (gender), CSIZE = company size, PROFIT = profitability, FCF = free cash flow, GROWTH = growth.

$* = p < .10$, $** = p < .05$, $*** = p < .01$.

4.4.2 Tobit Regression Analysis

The Tobit regression analysis is also known as the censored regression. The Tobit regression is used in this study to provide more information to estimate a regression line (McDonald and Moffitt, 1980). According to McDonald and Moffitt (1980), the Tobit uses all observation to estimate the value of dependent variable if it is already above the limit. In this study, the Tobit regression is conducted using standard regression and with robust standard error (Tobit-Robust) regression. Each of the step-wise regression is divided into three (3) models as presented in Table 4.8 and Table 4.9 and follows similar steps as in OLS regression.

For the Step 1 of Tobit regression, the full model is regressed and finds four positive significant variables which are CSIZE, PROFIT, FCF and GROWTH. This result is shown in Table 4.8 and the significant variables are similar to Step 1 of OLS regression. The same goes for their probability levels (i.e., CSIZE = $p < .01$, FCF = $p < .05$, PROFIT = $p < .10$, and GROWTH = $p < .10$). In Step 2, the study removes the two non-significant variables with p-value at $p \geq .25$ which are BIND and BFEMALE.

Hence, in Step 2, the study re-estimates the model and finds four positive effects that are associated with ER disclosures. The associated variables are CSIZE, PROFIT, FCF and GROWTH. Table 4.8 shows that CSIZE have positive effect at $p < .01$, *PROFIT* and FCF at $p < .05$, and GROWTH at $p < .10$. In Step 3, the study removes two more non-significant variables as their p-value is at $p \geq .10$ which are BSIZE and BMUSLIM. By some means, the re-estimation shows a reduction amount of significant variables from having four to just three positively significant variables which are CSIZE, PROFIT and FCF. All three significant variables have the probability level at $p < .01$. In conclusion, the result for stepwise Tobit regression shows that there are three variables that show positive effect on ER disclosure which are CSIZE, PROFIT, and FCF.

The last analysis in this study utilizes Tobit-Robust regression. Following similar steps in previous regressions, the result of the Tobit-Robust is shown in Table 4.9. In Step 1 of the Tobit-Robust finds five positive significant variables which are BSIZE, CSIZE, Profit, FCF and GROWTH. These variables are associated with ER disclosures where the probability level for CSIZE, PROFIT, AND FCF are at $p < .01$, whereas BSIZE and GROWTH are significantly associated at $p < .10$. However, in Step 2, the significant variables changes as to when the study removes the variables that are non-significant at $p \leq 0.25$. In step 2, BSIZE (p

= .136) is no longer significant. However BMUSLIM is now a significant variable together with CSIZE, PROFIT, FCF and GROWTH. Table 4.9 shows that CSIZE, PROFIT, and FCF are positively significant at $p < .01$. BMUSLIM and GROWTH have the probability level at $p < .10$.

In the final step, the model re-estimates with removing BSIZE and finds that there are only four variables that have positive relationship to the ER disclosure. The variables are namely BMUSLIM, CSIZE, PROFIT and FCF with probability level similar as in Step 2. In Step 3, the study finds GROWTH as non-significant when the p-value is at p = .117. To conclude, the result finds that there are four statistically significant variables (i.e., BMUSLIM, CSIZE, PROFIT and FCF) for stepwise Tobit-Robust regression model.

Table 4.8
Tobit Regression Results

TOBIT	**Step 1**		**Step 2**		**Step 3**	
	Full Model		**Delete p ≥ 0.25 in Step 1**		**Delete p ≥ 0.1 in Step 2**	
ERSCORE	**Coef.**	**P > t**	**Coef.**	**P > t**	**Coef.**	**P > t**
BSIZE	0.0114	0.121	0.0088	0.166	-	-
BIND	0.0942	0.248	-	-	-	-
BMUSLIM	0.0737	0.176	0.0908	0.115	-	-
BFEMALE	-0.0019	0.494	-	-	-	-
CSIZE	0.0333	0.003***	0.0329	0.004***	0.0383	0.001***
PROFIT	-0.0021	0.063*	-0.0023	0.045**	-0.0028	0.001***
FCF	-0.6470	0.048**	-0.0631	0.052**	-0.0454	0.005***
GROWTH	-0.0234	0.087*	-0.0219	0.100*	-0.0207	0.132
_cons	-0.5559	0.012	-0.4919	0.015	-0.5117	0.015

Note. BSIZE = board size, BIND = board independence, BMUSLIM=board diversity (religion), BFEMALE = board diversity (gender), CSIZE = company size, PROFIT = profitability, FCF = free cash flow, GROWTH = growth.

* = $p < .10$, ** = $p < .05$, *** = $p < .01$.

board diversity for religion and gender, company size, profitability, and free cash flow. The following section explains the hypotheses testing.

Based on the stepwise regression analyses in section 4.3, the study finds no significant relationship between the number of directors and the motivation for companies to practice ER in the annual reports. This finding is consistent with Ionel-Alin *et al.,* (2012) and Abdul Razak and Mustapha (2013) which finds having larger board members in Malaysian companies have no impact on the awareness on the importance of ER. Thus, the hypothesis for H_1 is not supported. As for board independence, the result of this study is similar in with with Wan Abdullah *et al.* (2012) and Janggu *et al.* (2014) where they find no impact of board independence on ER. Wan Abdullah *et al.* (2012) claims that independence directors need to be free from any influence that may affect their professional judgments, integrity and objectivity of the company's business objective. Thus, the hypothesis for H_2 is rejected.

Theoretically, this study rejects the agency theory due to the insignificant result for board size. The study rejects the theory suggestions by Jensen and Meckling (1976) that explains the behaviour of company's directors that requires monitoring and control by the board members. This is to prevent any misleading decisions that do not serve the company's interest (Elsakit and Worthington, 2014).

Following the *taqwa* paradigm by Dusuki (2008), this study assumes positive relationship of board diversity (religion) on ER disclosure where Muslim directors are the proxy for the variable. Excluding the stepwise Tobit regression, the other stepwise regression analyses find similar finding of Salehuddin and Fadzil (2013) and Abdul Rahman and Bukair (2013). The findings postulate that although the percentage of having Muslim board members is just 26 percent on average, the influence on ER disclosure exists. The *taqwa* paradigm posits that Muslim director can influence other directors as they are thought to be more transparent and accountable towards their actions and decisions. Thus, the result from this study supports the hypothesis of H_3 .

On the other hand, the study finds that the influence of the percentage of having Women board members directors towards the ER disclosure is not significant across all the stepwise regression analyses. This result contradicts to most of prior studies (i.e., Abdullah and Ku Ismail, 2013; Salehuddin and Fadzil, 2013; and Abdullah, 2014) that usually finds that the existence of Women/female directors will enhance the awareness to voluntary disclosure and firm performance (Akpan and Amran, 2014). The findings also do not support the signaling theory that posits Women as a signal to persuade other board members to publicly convey its environmental information. In all, the hypothesis of H_4 is not supported.

Based on the regression analysis of both OLS and Tobit regression, the study finds positive significant relationship between company size (natural log of total asset) and the practice of ER. The result is consistent with most of prior studies (i.e. Buniamin *et al.* (2011); Alarussi et al., 2009; Buniamin, 2010; Salehuddin *et al.* (2013); and Sulaiman *et al.*, 2014) that examines determinants of ER disclosures. It is argued by Buniamin *et al.* (2011), large companies tend to disclose more environmental information to reduce public pressure and usually portray to be more visible and accountable to the public (Cormier and Gordon, 2001). Overall, the the hypothesis of H_5 is supported.

The result also shows positive association between the profitability and ER disclosures. The profitability in this study is measured using the return on asset as it is typically used in prior studies (i.e., *Smith et al.*, 2007; Alarussi, 2009; and Suttipun and Stanton, 2012) when examining the influence against the ER disclosure. This finding is consistent with the expectations and results of Gray *et al.* (2001), Smith *et al.* (2007), Ong *et al.* (2014), Sulaiman *et al.* (2014), Ong *et al.* (2014) and Muttakin and Subramaniam (2015). These studies find companies with higher profits have better resources to disclose environmental information in their annual reports. Hence, the hypothesis for H_6 is supported.

The regression analysis finds that FCF also has positive association on the ER disclosure. Jensen (1986) points out that company with free cash flow would opt for other investments that benefit them instead of disclosing ER for public benefits. However, the study's finding is similar with Dittmar and Smith (2007) and Brisker *et al.* (2013) where having large free cash flow encourages a company to disclose more ER.

Specifically, this study hypothesises that all seven hypotheses namely, board size (H_1); board independence (H_2); board diversity (religion) (H_3); board diversity (gender) (H_4); company size (H_5); profitability (H_6); and free cash flow (H_7); have positive association on ER disclosure. Nonetheless, the findings only supports four hypotheses which are H_3, H_5, H_6, and H_7. This result demonstrates that four out of seven of the factors from this study have positive influence on the ER disclosure of Industrial Product Listed Companies of Bursa Malaysia.

4.6 Chapter Summary

This chapter summarizes the results on the relationship between the corporate governance characteristics and corporate characteristics on ER disclosure practices. The study uses four regression models which are OLS, OLS-Robust, Tobit and Tobit-Robust. The regressions are conducted to test for significant association of all seven developed hypotheses. The findings indicate all except Muslim directors' hypothesis concerning the corporate governance characteristics are rejected. While the hypotheses for corporate characteristics namely company size, profitability and free cash flow are not rejected. By having such findings, some implications could be drawn from the study. The implications will be discussed in terms of theoretical and practical in subsequent chapter.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter provides a summary of the research that it will be explained in three sections. The first section is a summary of the key findings that answer the objectives of the study. The following section discusses the limitations faced in the study and lastly, section three suggests studies that could be undertaken in the near future.

5.2 Summary of key findings

This study is motivated by the government's initiatives in promoting CSR disclosure of companies in Malaysia. The initiatives are inclusive of the Listing Requirements of Bursa Malaysia and the newly enhanced guidelines of MCCG 2012. In particular, PLCs are the initial target for realizing this objective. The annual reports acts as the tool for the justification of the compliance on the two initiatives mentioned earlier. However, companies tend to ignore environmental issues to be disclosed in their annual reports (Buniamin *et al.,* 2011).

Hence, this matter has motivated the study to investigate whether these initiatives can promote companies in Malaysia to disclose more environmental issues in the annual reports. In addition, companies can portray that they are environmental responsible towards their stakeholders. As a result, the objective of this study is to examine the determinants that influence the ER disclosure for listed companies in Malaysia. In particular, the study examines companies from the Industrial Product Listed Companies of Bursa Malaysia in compliance towards the MCCG 2012.

In addition, the study aim to answer two objectives of this study; (i) Do corporate governance attributes influences companies' ER disclosures and (ii) Do corporate characteristics affect companies' ER disclosures. To examine the CG characteristics, four characteristics are chosen namely board size, board independence, board diversity of gender and board diversity of religion. The determinants for corporate characteristics are company size, profitability, and free cash flow. This study uses four different regression models to investigate the influences between CG characteristics and corporate characteristics against ER disclosure. The regression models are OLS, Tobit, and robust regression for both OLS and Tobit.

When investigating the first objective of the study, the results reveals that board diversity of religion has positive influenced to ER disclosure. In other words, having Muslim directors can positively influence company to disclose environmental information to the public. Somehow, companies that have managers that adopt the *taqwa* paradigm will eventually adopt the good quality of a manager to be more transparent on their business actions. The companies also portrays to other stakeholders that they are accountable for all of their decisions that may affect not only humans but the natural environment as well. The influence of Muslim directors on ER disclosure does exist in a company although the Muslim board members are still the minorities in the board structure. Having said that, this study proves that they do encourage companies to comply with both the Bursa Malaysia's listing requirements and MCCG 2012 to practice ER disclosure in the annual reports.

In contrast, other CG characteristics namely board size; board independence and board diversity of gender have no significant influence on ER disclosure. Empirical studies have concluded that the insignificant result for board size indicates that a larger board member may not define efficiency for ER disclosure. As for board independence, empirical results from the study suggest that the variable have no influence on the level of ER reporting in Malaysia. This is indicates that the independent directors could not play their role to push other directors in the decision to disclose ER in the annual reports.

The study also finds no significant influence of the percentage of having Women board members directors towards the ER disclosure. Having a small amount of Woman directors in the companies does not influence other Men directors to practice the ER. On average, the percentage of Women directors in the sample companies is just around 10 percent. Thus, these companies have not reached to the proposed percentage of having 30 percent of Women directors in the top management by the Prime Minister of Malaysia. Hence, this gives signals that companies need more Women directors who may influence other directors to practice ER disclosure in the annual reports.

In contrast to the CG variables, corporate characteristic variables find positive statistical significant influence on ER disclosure (i.e. company size, profitability, and free cash flow). The result illustrates that larger companies disclose more environmental information in the annual reports. This is due to the fact that larger companies have more resources to provide voluntary disclosure at minimal cost. When companies deliver more information, large companies can attract new investors to receive more funds for their business and social activities. This is probably due to the pressure from stakeholders to illustrate the image of being more sensitive to societal perceptions when concerning environmental issues.

Based on this study, profitability has significant positive relationship against the ER disclosure. This implies that companies that are more profitable are able to provide environmental information in the annual reports. From the findings of the study, free cash flow has significant positive association against ER. Companies with high free cash flow provide more disclosure on ER. In addition, extra cash flow encourages company to spend more on non-profitable investments (i.e., environmental reporting) as a value added instrument to enhance the company's reputation. Thus, the hypothesis for H_7 is not rejected. In addition, the study also to finds a positive impact of growth on ER disclosure.

Growth, as the control variable, is expected to have significant influence on ER. This study finds that growth is significant against ER disclosure. This indicates that the Malaysian listed companies of industrial product that have higher growth opportunity tend to disclose more environmental information. These results support the legitimacy theory that posits companies enhances their business actions and decisions to appear socially responsible to the public (i.e. legislators and stakeholders).

In summary, it can be concluded that larger companies with Muslim directors, with higher profit and large free cash flow tend to disclose more information on environmental in their annual report. It also shows that the sample companies adhere to the government's initiatives to promote reports on their environmental impacts beyond regulatory compliance as part of their sustainability reports. The results should be interpreted cautiously due to some limitations faced in the study. The limitations are explained in the following section.

5.3 Limitations and Recommendations for future research

Firstly, due to time limitation and in-depth data collection procedure, this study is limited to cross-sectional analysis using only one year observation with 100 randomly selected Industrial Companies. Nevertheless, this study provides useful observations into the relationship between a few corporate governance characteristics and corporate characteristics with the ER disclosure. However, there are a number of limitations of this study that can be improved further in future.

First of all, the secondary data was collected from two sources which are the company's annual reports and Data Stream. However, the annual report should not be considered as a complete measure of a company's involvement in environmental commitment. Additional sources for acquiring the secondary data can enhance the reliability of the disclosure of ER. Sources that are recommended other than annual reports are company websites, company newsletter, separate environmental report or bulletin, separate CSR report and newspapers. In other words, there are many companies that have zero ER disclosure in their annual report but these companies may very well have expenses on ER. These companies may considered them as immaterial or do not consider them as necessary requirements.

Secondly, this study does not include all corporate governance and corporate characteristics as a whole. There are other factors that could contribute to the significance influence against ER disclosure for the sample companies. For future research on ER disclosure, other researcher should increase other explanatory corporate governance variables, particularly CEO duality, Muslim chairman, ownership, and professional/education background of directors. It is suggested that other explanatory corporate variables such as listing age, and capital raised be included in the model. These limitations narrow the possibility for researcher to view the determinants that can influence the ER disclosure under the latest regulations made by the Malaysian government in a wider perspective. It is also suggested that future studies extend the number of years which can capture the recent pattern of ER disclosure in line with global trends and legal requirements by the Malaysian government.

Lastly, the result of Muslim directors having positive influence on environmental reporting suggests positive implication for additional policy for the government and legislators. In this study, a Muslim director can perhaps influence other directors to disclose environmental reporting. Thus, it is recommended that the listing requirements policy of Bursa Malaysia could add a requirement of having at least one percent of the director as a Muslim. As a result, Bursa Malaysia might see a better corporate governance to support its target for a sustainability corporation.

In addition, the study also recommends for future studies to employ the FTSE4 Good Bursa Malaysia Index (collaboration between Financial Times Stock Exchange (FTSE) and Bursa Malaysia). The FTSE4Good Bursa Malaysia Index is the latest step for the Bursa Malaysia to maintain better corporate governance in the marketplace via its sustainability target (Bursa Malaysia, 2015). It is a new Environmental, Social and Governance (ESG) Index that is designed to measure companies' performance that practices good ESG. In line with the Global Reporting Initiative (GRI) and the Carbon Disclosure Project, the use of FTSE4Good Bursa Malaysia Index, can demonstrate that Malaysian listed companies supports the transition to a lower carbon and more sustainable economy. Hence, encourages these companies to obtain best practice disclosure and good governance in accordance to the enhancement brought by MCCG 2012.

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