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09 MAR 2017

**ENVIRONMENTAL DISCLOSURE CONTENT-QUALITY IN
VARIOUS REPORTING MEDIA: AN EMPIRICAL STUDY OF
OIL AND GAS COMPANIES IN DEVELOPING COUNTRIES**



UUM
Universiti Utara Malaysia

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**DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA
April 2016**

ENVIRONMENTAL DISCLOSURE CONTENT-QUALITY IN VARIOUS
REPORTING MEDIA: AN EMPIRICAL STUDY OF OIL AND
GAS COMPANIES IN DEVELOPING COUNTRIES



By
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UUM
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Thesis Submitted to College of Business Universiti Utara Malaysia in Fulfilment
of the Requirement for the Degree of Doctor of Philosophy



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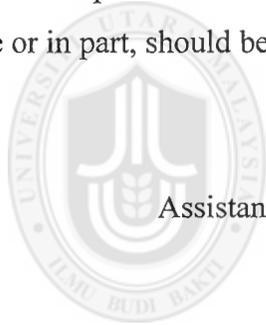
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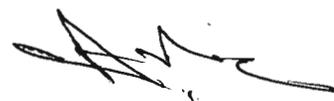


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ABSTRACT

With the increasing global concern for the environment, environmental disclosure occupies a significant place within the firm's disclosure strategy. The majority of prior environmental disclosure studies have focused on the quantity of disclosure in the annual reports but less attention has been given on the quality of disclosure. Most of the studies that focused on the quality of environmental disclosure have found low level of quality of such disclosure. Therefore, this study aims to investigate the content-quality of environmental disclosure in different reporting mediums by oil and gas companies in developing countries. The study also identified factors that could influence the content-quality of environmental disclosure. Using content analysis, an index and scoring system on the basis of the dimensions of evidence (monetary/quantitative, non-quantitative) and specificity (specific, general) were applied to the annual reports, stand-alone reports and corporate homepages of a sample of 116 oil and gas companies in 19 developing countries. The results of this study reveal that the content-quality of the environmental disclosure of the sample companies is relatively high. The results also indicate great variations in the disclosure content-quality in different reporting media. The stand-alone reports have greater content-quality than annual reports and corporate homepages in communicating environmental information. Moreover, the results of this study reveal that out of twelve hypothesised variables, only five variables (company size, foreign ownership, profitability, leverage and membership of industry's associations) are positively related to the environmental disclosure content-quality. The study has implications in enhancing the understanding of environmental disclosure practices of oil and gas companies in developing countries and factors that influence the content-quality of such disclosure. Additionally, the study has provided an insight into the differences between disclosures in different reporting mediums, which in turn will facilitate the selection of reporting medium/s of environmental information that can be relied upon.

Keywords: environmental disclosure content-quality, reporting media, oil and gas industry, developing countries



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ABSTRAK

Keprihatinan terhadap alam sekitar yang semakin meningkat secara global telah menyebabkan pendedahan terhadap alam sekitar menduduki tempat yang penting dalam strategi pendedahan firma. Kebanyakan kajian tentang pendedahan alam sekitar terdahulu memberikan tumpuan kepada kuantiti pendedahan dalam laporan tahunan tetapi tidak banyak kajian yang memberikan perhatian kepada kualiti pendedahannya. Sebahagian besar kajian yang memberi tumpuan kepada kualiti pendedahan alam sekitar mendapati kualiti pendedahan tersebut berada pada tahap yang rendah. Oleh itu, kajian ini bertujuan untuk mengkaji kualiti pendedahan alam sekitar oleh syarikat-syarikat minyak dan gas di negara-negara membangun melalui medium laporan yang berbeza-beza. Kajian ini juga mengenal pasti faktor-faktor yang boleh mempengaruhi kualiti pendedahan alam sekitar. Dengan menggunakan analisis kandungan, skim indeks dan pemarkahan telah dijalankan ke atas sampel yang terdiri daripada laporan tahunan, laporan sendiri (*stand-alone reports*) dan Laman Web korporat 116 buah syarikat minyak dan gas di 19 buah negara membangun. Keputusan kajian ini menunjukkan bahawa kualiti pendedahan alam sekitar di syarikat sampel agak tinggi. Keputusan juga menunjukkan variasi dalam pendedahan kualiti melalui laporan media yang berbeza. Laporan sendiri mempunyai kualiti yang lebih besar berbanding laporan tahunan dan Laman Web korporat dalam menyampaikan maklumat alam sekitar. Selain itu, hasil kajian ini menunjukkan bahawa daripada dua belas pemboleh ubah hipotesis, hanya lima pemboleh ubah (saiz syarikat, pemilikan asing, keuntungan, pengaruh dan keahlian persatuan industri) berkaitan dengan kualiti pendedahan alam sekitar secara positif. Kajian ini mempunyai implikasi dalam meningkatkan pemahaman terhadap amalan pendedahan alam sekitar syarikat minyak dan gas di negara-negara membangun dan faktor-faktor yang mempengaruhi kualiti pendedahan tersebut. Selain itu, kajian ini telah memberikan gambaran tentang perbezaan di antara pendedahan-pendedahan tersebut dalam medium laporan yang berbeza, yang seterusnya akan memudahkan pemilihan medium pelaporan maklumat alam sekitar yang boleh dipercayai.

Kata kunci: kualiti pendedahan alam sekitar, media pelaporan, industri minyak dan gas, negara-negara membangun



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LIST OF ABBREVIATIONS

| | |
|-----------------|--|
| AAA | American Accounting Association |
| AIP | Australian Institute of Petroleum |
| API | American Petroleum Institute |
| ARPEL | Regional Association of Oil and Natural Gas Companies in Latin America and the Caribbean |
| B2B | Business-to-Business |
| bbbl. /d | Barrel Per Day |
| BN | Brand Name |
| BP | British Petroleum Company |
| C2M | Close to Market |
| CED | Corporate Environmental Disclosure |
| CEP | Corporate Environmental Performance |
| CER | Corporate Environmental Reporting |
| CERES | Coalition Environmentally Responsible Economies |
| CO ₂ | Carbon Dioxide |
| CQLEDIS | Content-Quality of Environmental Disclosure |
| CQS | Content-Quality Score |
| CSD | Corporate Social Disclosure |
| CSED | Corporate Social and Environmental Disclosure |
| CSR | Corporate Social Responsibility |
| CSRD | Corporate Social Responsibility Disclosure |
| CSRR | Corporate Social Responsibility Reporting |
| DCs | Developing Countries |
| DI | Disclosure Index |
| E&P | Exploration and Production |
| EA | Environmental Accounting |
| ED | Environmental Disclosure |
| EDCQ | Environmental Disclosure Content-Quality |
| EDI | Environmental Disclosure Index |
| EDQ | Environmental Disclosure Quality |
| EIA | Energy Information Administration |
| EMS | Environmental Management System |
| EPA | Environmental Protection Authority |
| ER | Environmental Reporting |
| EUROPIA | European Petroleum Industry Association |
| FASB | Financial Accounting Standards Board |
| GEMI | Global Environmental Management Initiative |
| GRI | Global Reporting Initiative |
| HS&E | Health, Safety and Environment |
| IMF | International Monetary Fund |
| IPIECA | International Petroleum Industry Environmental Conservation Association |
| ISO | International Organization for Standardization |
| JV | Joint Venture |
| MENA | Middle East and North Africa |
| MNC | Multinational Company |
| NOC | National Oil Company |
| NGOs | Non-governmental Organizations |

| | |
|--------|--|
| OGP | International Association of Oil and Gas Producers |
| OIEP | Oil International Exploration and Production Forum |
| OIAC | Oil Industry Accounting Committee |
| OLS | Ordinary Least Squares |
| OPEC | Organization of the Petroleum Exporting Countries |
| PAJ | Petroleum Association of Japan |
| PDF | Portable Document Format |
| PERI | Public Environmental Reporting Initiative |
| PERI | Public Environmental Reporting Initiative |
| PET | Political economy theory |
| PRP | Potentially Responsible Parties |
| RET | Retail |
| SAPIA | South African Oil Industry Association |
| SED | Social and Environmental Disclosure |
| SFAC | Statement of Financial Accounting Committee |
| SORP | Statement of Recommended Practice |
| SRD | Social Responsibility Disclosure |
| STEP | Strategies for Today's Environmental Partnership |
| TBL | Triple Bottom Line |
| TCQS | Total Content-Quality Score |
| U.S. | United States |
| UK | United Kingdom |
| UN | United Nations |
| UNDP | United Nations Development Program |
| UNEP | United Nation Environmental Program |
| UNRISD | United Nations Research Institute for Social Development |
| US EPA | United States Environmental Protection Agency |
| VED | Voluntary Environmental Disclosure |
| WBSCD | World Business Council on Sustainable Development |
| WRI | World Resources Institute |

CHAPTER ONE

BACKGROUND OF THE STUDY

1.1 Introduction

Corporate social and environmental responsibility has become a major contemporary focus of business, government and community attention globally (Parker, 2014). The environment is recognized as an asset to be managed and in return environmental reporting is pertinent (Sulaiman, Abdullah and Fatima, 2014).

Global warming, ozone depletion, and environmental pollution are environmental concerns that affect the globe. Global warming for example is evidenced from different indications, such the notable heightening in global average air and ocean temperatures, the extensive snow and ice melting, and the increasing global average sea level. Global temperatures also showed an increase that ranged from 1.0-1.6 degrees Fahrenheit in the past century and this increase is forecasted to continue to rise to 2.0-11.5 degrees in the current century (Jewell, 2007). Thus, more and more global natural disasters occur, which alerts the human beings to perform global environmental protection responsibilities.

Consequently, environmental issues have increasingly drawn the attention of the world at different levels (international organizations, governments, environmental organizations and groups, media, and public at large). Many global summits and conferences have been held to discuss climate change (e.g. United Nations Conference on Environment and Development, or the “Earth Summit”, Rio de Janeiro, 1992; Kyoto, 1997; Copenhagen, 2009; and more recently, Paris Climate

Change Summit in 2015), and many international and regional conventions and agreements have been signed around the world (e.g. the UN Global Compact 1999, and the Kyoto Protocol, 1997). Environmental protection legislations have been enacted in many developed countries, environmental organizations have played a significant role in environmental protection through the exercise of pressures on firms, and moreover, the companies themselves have contributed to increasing of the level of environmental awareness also (Eljayash, James and Kong, 2012).

Awareness of the role of economic and business activities on the depletion of natural resources as evidenced by the global warming, greenhouse gas emissions and deforestations, and the social environments as evidenced by the rich-poor gap and increasing poverty in developing nations, is widespread around the global community. So, among the largest consumers of natural and social resources, business organizations have come under increased pressure to justify the nature and scale of their consumption. Specifically, business organizations, particularly industrial communities, are considered more responsible for their impacts to the environment and society (Brammer & Pavelin, 2006). Corresponding to this increasing attention, businesses are adopting new policies that aim to balance their economic performances against their social responsibilities (Bosshard, 2003; Krishnamoorthy, 2004). As a result, interest in environmental disclosure (ED) has grown rapidly (Rupley, Brown and Marshall, 2012). However, attention on disclosing environmental information has been confined to the corporations of developed world, while the corporations of developing world still have a lack of understanding about such disclosure (Eljayash *et al.*, 2012; Kaur, 2015).

1.1.1 Oil and Gas Industry and its Environmental Impacts

Energy¹ plays a vital role in the modern era, as it is a basic input for all development activities (Bose, 2006). It has always been a key and leading driver of growth and development of any society. Furthermore, human activities have become impossible without energy as human beings use energy from their waking hour until they turn in at night, indicating energy's importance to human lives. Since the 1950s, oil and gas have been the main sources of primary energy (United State Energy Information Administration [EIA], 2004). Oil and gas currently satisfy approximately 60% (specifically, oil is 37% and gas is 22%) of the world's energy needs. Oil and gas will continue to satisfy most of the world's energy needs, with a share between 57-59% during the period of 2010-2030 (Organization of the Petroleum Exporting Countries [OPEC], 2008).

It is well recognized that, petroleum is the world's most important internationally traded commodity (Seba, 2003), it may be the top controversial and influential commodity in the world (O'Rourke & Connolly, 2003). Oil and gas industry plays significant role in many economies, and this industry has become the main industry in many countries. Furthermore, international petroleum companies have an important role in shaping global politics and economics (Eljayash *et al.*, 2012). The oil and gas industry offers enormous benefits as petroleum by-products play an essential role in development, particularly for roads asphalt, transport fuels, generation of electricity, heating and cooking and raw material for plastic (American Petroleum Institute & International Petroleum Industry Environmental Conservation Association [API & IPIECA], 2005). However, these benefits are associated with many adverse

¹ Primary energy includes fossil fuels (oil, gas and coal) and non-fossil fuels (unclear, hydro, biomass and other renewable energy such as wind and solar).

consequences, such as, environmental pollution (Ariweriokuma, 2009). The oil and gas industry is among the industries with the greatest impacts on the environment. According to the International Energy Agency (IEA, 2015), energy-related carbon dioxide (CO₂) emissions are the majority of global greenhouse gas (GHG) emissions, while, oil and gas are the largest source of fuel combustion emissions and responsible for approximately 53% of global energy-related CO₂ emissions in 2013.

It is well recognized that environmental effects of the petroleum operations on the natural environment are very high (Mughal, 2014). At each stage of oil and gas industry (exploration, development, production, transportation, and refining) there are adverse effects on the environment (Frynas, 2009). Several environmental risks are inherent to the oil and gas industry activities; natural resource depletion, air emissions, interference in the territories, biodiversity impacts, and waste disposal, among others. In addition, oil and gas activities have the potential to cause serious incidents to the occupational health and safety of people engaged in such activities (Schaltegger, Bennett, Burritt, & Jasch, 2008). The increased activities of petroleum corporations worldwide have contributed to increasing environmental concern (Eljayash *et al.*, 2012). Table 1.1 illustrates the environmental impacts of oil and gas operations.

Table 1.1
Potential Environmental Impacts of Oil and Gas Activities

| Activity | Potential Environmental Impact |
|-----------------------------|--|
| Exploration and development | Footprint, noise, light, emissions and discharges, interference, waste, socio-economic, cultural. |
| Production | Footprint, discharges, wastes, emissions and discharges, light, socio-economic, cultural, interactions |
| Refining | Emissions and discharges, light, noise, waste, water |
| Transportation | Emissions and discharges, light, noise, waste, water |

Source: Adapted from Exploration and Production Forum & United Nations Environment Programme (1997), and Frynas (2009)

However, in addition to the environmental effects that result from normal operations of oil and gas activities, the effects may be the results of occasional events such as, oil spill and explosion. Environmental incidents such as oil spills, gas explosions and fires often cause enormous ecological and human destructions. Consequently, the corporations responsible for the incidents are exposed to high public pressures (Islam and Islam, 2011). Thus, across the world, oil and gas industry is under societal pressure to reduce its impacts on the environment (Frynas, 2009).

During the last four decades, the oil and gas industry has witnessed several critical environmental incidents. Exxon Valdez oil spill of Alaska in 1989 was seen as one of the worst oil spills in world history, as over 11 million gallons of crude oil were released. Within a year of the incident, Exxon had spent over USD 2 billion to clean up the spill and restore the affected area (Patten, 1992).

Gulf of Mexico oil spill of 2010 was also considered as one of the largest oil spill in history and the worst environmental disaster in the U.S. It caused spilling of 5,000 barrel/day (while other experts estimate five times this amount) of oil into the water a day. Due to its location (deep water), there were many difficulties faced in controlling the leakage and reducing its impacts and consequently, the leaking continued for five months (from April 20 to September 19, 2010). The British Petroleum (BP) and different American authorities spent huge efforts to slow it from reaching the U.S. shoreline, and eventually stopped it using different methods and technologies. The BP spent huge amount on spill response, containment relief well drilling and granting the Gulf States hit by the spill with compensations as well as additional compensations to some of those affected by the spill (BBC, 2010). Thus,

this environmental incident recalled the intention and raised safety and environmental issues throughout the oil industry. For instance, after this incident, investors (as stakeholders group) became more concerned regarding the environmental risks of potentially hazardous production projects (Heflin and Wallace, 2014). Table 1.2 illustrates the most significant oil spills around world during the last four decades.

Table 1.2
Major Oil Spills during Last Four Decades

| No | Location | Date | Values in Tonnes |
|----|---|-----------|------------------|
| 1 | Mexico, Bay of Campeche, Gulf of Mexico | 1979-1980 | 480,000 |
| 2 | Greece, Pylos | 1980 | 100,000 |
| 3 | France, Brittany | 1980 | 13,500 |
| 4 | Iran, Persian Gulf | 1983 | 260,000 |
| 5 | South Africa, Saldanha Bay | 1983 | 252,000 |
| 6 | Iran, Gulf of Iran, Kharg Island | 1985 | 70,000 |
| 7 | Canada, 700 nmi (810 mi) off Nova Scotia | 1988 | 132,000 |
| 8 | United States, Prince William Sound, Alaska | 1989 | 104,000 |
| 9 | Spain, 350 nmi (400 mi) off Las Palmas de Gran Canaria | 1989 | 80,000 |
| 10 | United States, Gulf of Mexico (57 mi) SE of Galveston, | 1990 | 16,501 |
| 11 | Iraq, Persian Gulf | 1991 | 820,000 |
| 12 | Angola, 700 nmi (810 mi) offshore | 1991 | 260,000 |
| 13 | Italy, Mediterranean Sea near Genoa | 1991 | 144,000 |
| 14 | Australia, Indian ocean, off the coast of Western Australia | 1991 | 17,280 |
| 15 | Uzbekistan | 1992 | 285,000 |
| 16 | Spain, A Coruna | 1992 | 74,000 |
| 17 | Mozambique, Maputo | 1992 | 72,000 |
| 18 | United Kingdom, Shetland | 1993 | 85,000 |
| 19 | United Arab Emirates | 1994 | 15,900 |
| 20 | United Kingdom, Pembrokeshire | 1996 | 72,000 |
| 21 | France, Bay of Biscay | 1999 | 25,000 |
| 22 | Spain, Galicia | 2002 | 63,000 |
| 23 | Yemen, Gulf of Aden | 2002 | 12,200 |
| 24 | Pakistan, Karachi | 2003 | 30,000 |
| 25 | Lebanon | 2006 | 30,000 |
| 26 | Australia, Timor Sea | 2009 | 30,000 |
| 27 | United States, Gulf of Mexico | 2010 | 627,000 |
| 28 | Nigeria, Niger Delta | 2010 | 95,500 |
| 29 | China, Yellow Sea | 2010 | 90,000 |
| 30 | Venezuela, Maturín, Monagas | 2012 | 41,000 |

Source: Adapted from The Mariner Group, <http://www.marinergroup.com/oil-spill-history.htm>; and International Tanker Owners Pollution Federation, <http://www.itopf.com/knowledge-resources/documents-guides/document/oil-tanker>

In general, polluting industries spend a lot of money to decrease environmental impacts of their operations (Pan, Sha, Zhang and Ke, 2014). Thus, the environmental adverse impacts of the oil and gas industry affect the industry's economic performance, as this environmentally sensitive industry is subject to costly environmental regulation. For example, the American Petroleum Institute (API) reported that the \$252.8 billion has been invested by the U.S. oil and natural gas industry since 1990 onwards for the improvement of its products, facilities and operations environmental performance. Specifically, in 2011, around \$12.9 billion was invested for the environment (American Petroleum Institute [API], 2012). At the corporate level, ExxonMobil's worldwide environmental costs (including capital expenditures and site restoration and environmental provisions) in 2002 totaled USD 2343 million. (ExxonMobil Corporation, 10-K Report Section 1, December 31, 2002, as cited in, Cho, Roberts and Patten, 2010).

The environmental incidents that occurred in the oil and gas industry have contributed to increasing of environmental awareness worldwide (Eljayash *et al.*, 2012). The increase of global environmental problems has largely influenced businesses to engage in environmental management and practice including environmental reporting (Yusoff and Othman, 2013). The common perception is that activities of environmentally sensitive industries have more harmful effects on the environment (Sulaiman *et al.*, 2014). Oil and gas companies are likely to attract higher local expectations and attention and are therefore expected to demonstrate higher social responsibility (Fragouli and Danyi, 2015).

Thus, because of the effects of the oil and gas industry on the environment, environmental disclosure in this environmentally sensitive industry becomes an important issue. Gray, Kouhy and Lavers (1995a) argued that industry-specific reporting such as the oil and gas industry is important as its influence may lead to public reactions. Prior research pointed that the risks arising from specific environmental incidents affect the reporting practices of the particular company and of the other companies operating in the same industry. For example, after Exxon Valdez oil spill of Alaska in 1989, companies affiliating to the oil and gas industry dramatically increased environmental reporting (Ahmad, Hassan and Mohammad, 2003, Patten, 1992, Suttipun and Stanton, 2012).

Islam and Islam (2011) investigated the environmental disclosure practice of a multinational oil and gas company (Niko Resources Ltd – a Canada-based multinational oil and gas company) operating in Bangladesh following the two major environmental blowouts at a gas field in 2005. The findings suggested that, the company's disclosure practice was associated with public concern pertaining to the incidents. Similarly, it was indicated that, the Gulf of Mexico oil spill raised questions about the extraction methods used by the entire oil and gas industry, therefore oil and gas companies increased their environmental disclosures (Summerhays and De Villiers, 2012). However, it was argued that the role of corporate social disclosure (including environmental disclosure) for petroleum industry is very important as the environmental effects of the petroleum companies on the society, natural environment are very high (Mughal, 2014).

1.1.2 Oil and Gas Industry and Its Environmental Issues in Developing Countries (DCs)

Focusing on environmental disclosure in developing countries² (also known as “emerging economies”, “emerging market economies”, “emerging markets”, and “Third World” countries) is important as these countries represent rapidly expanding economies and growth markets (International Monetary Fund [IMF], 2006). As business activities have social and environmental impacts (World Bank, 2006), developing countries may face critical social and environmental crises more than developed countries (United Nations Development Programme [UNDP], 2006; World Resources Institute [WRI], 2005). The governments of developing countries are increasingly showing pro-active tendencies when it comes to preventing environmental harm and making up for negative events that have already occurred.

It is well recognized that, oil and gas operations have a very large impact on the environment. A large volume of the world’s proven recoverable reserves of crude oil and natural gas liquids is held by the DCs, and most of production is also produced by them. Table 1.3 illustrates that, at the end of 2013, the DCs held 82% of the world’s proven recoverable reserves of oil and natural gas liquids and accounted for 67% of world’s production of oil and natural gas liquids.

Table 1.3
World Crude Oil and Natural Gas Liquid Reserves and Production at end 2013

| | Proved Recoverable Reserves | | Daily production | |
|----------------------|-----------------------------|------------|--------------------------|------------|
| | Million Barrels | Percentage | Thousand Barrels Per Day | Percentage |
| Developed Countries | 305,707 | 18% | 28,924 | 33% |
| Developing Countries | 1,352,399 | 82% | 58,418 | 67% |
| Total World | 1,658,106 | 100% | 87,342 | 100% |

Source: Adapted from Eni’s World Oil and Gas Review 2014, www.eni.com

²There is no clear, fixed and generally accepted definition of a developing country. Therefore, there is no fixed and generally accepted country classification. For the purpose of this study, the term “developing countries” refers to a group of countries classified under developing countries according to United Nations Development Programme (UNDP) country classification system.

Considering this significant amount of reserves and production of oil and gas coupled with the environmentally sensitive nature of this industry, makes the DCs highly exposed to environmental impacts. In addition, it was recognized that, in the era of globalization, the worldwide presence of multinational companies and highly publicized environmental incidents in developing countries, issues of corporate social responsibility (CSR) and its publications seem to be more significant in developing nations (United Nations Research Institute for Social Development [UNRISD], 2000). However, it was recognized that the adverse effects of the oil and gas companies are greater in the developing countries (Abdalla and Siti-Nabiha, 2015). All these make reporting on environmental aspects of oil and gas companies very important from the developing countries governments' point of view.

It is also recognized that the success of operations of multinational companies (MNCs) in host countries can be greatly impacted by their level of local acceptability, and occurrence of major oil disasters raise a question as to how international companies can effectively manage local expectations and the associated problems of oil production in order to gain local acceptability (Fragouli and Danyi, 2015). Companies use environmental disclosure as a mechanism to manage society expectations toward corporate operations and increase reputations (Haji, 2013; Perez, 2015; Yin, 2012). All these make reporting on environmental aspects of companies very important from the preparers' (companies) point of view.

1.1.3 Environmental Reporting Research and Practices in Developing Countries

The literature points out that the majority of previous studies concerned with social and environmental disclosure have been conducted in the developed world, but

comparatively limited studies have been undertaken in the developing countries (Eljayash, Kavanagh and Kong, 2013; Joseph, Pilcher and Taplin, 2014; Kansal, Joshi and Batra, 2014; Kaur, 2015; Lu and Abeysekera, 2014; Mughal, 2014; Yusoff and Othman, 2013). In practice, social and environmental disclosure has matured in some developed countries; however, in some developing nations, it is still a relatively new practice (Kaur, 2015; Lu and Abeysekera, 2014; Mughal, 2014). In particular context of a developing country, Djajadikerta and Trireksani (2012) indicated that the practice of corporate social and environmental disclosure (CSED) in Indonesia is still at an early stage, and most of the companies still have a lack of understanding about CSED. Ahmad and Hossain (2015) concluded that disclosure of Malaysian companies on climate change and global warming issues is still at its introductory stage. In addition, it was noted that findings of studies that focused on the developed countries cannot be generalized to less developed countries as differences in culture and nationality are expected to influence the accounting and environmental practices (Matthew, 1993).

Belal (2001) argued that because of the limited number of social reporting studies conducted in the developing countries and given the fact that their socio-economic context is different, it is important to learn about the corporate social responsibility practices in those countries. Additionally, corporate social and environmental disclosure may not be universally applicable to all countries as they are in differing phases of economic development, and to all corporations as they have differing degrees of awareness and attitudes concerning such disclosure (Hossain, Islam, & Andrew, 2006).

Environmental laws in developing countries seem to be frailer than laws in developed countries (O'Rourke & Connolly, 2003). Moreover, a number of major oil producing countries – mostly developing countries – have either of the three factors namely ineffective environmental laws, laggard enforcement of laws, or non-existent environmental laws (O'Rourke & Connolly, 2003). However, Haji (2013) suggested research on CSR disclosure involving several developing countries to ascertain the existence of corporate legitimization exercises in the developing countries.

1.2 Statement of the Problem

The public concern of environmental issues has increased (Aburaya, 2012; Cuesta and Valor, 2013; Eltaib, 2012). This makes reporting on environmental aspects of companies very important. Despite the increasing awareness of society towards environmental issues and the importance of disclosing environmental information, environmental disclosure worldwide is generally unregulated and voluntary in nature (De Villiers and Van Staden, 2012; Michelon, Pilonato and Ricceri, 2015; Sen, Mukherjee and Pattanayak, 2011).

As environmental disclosure is primarily voluntary, many of the companies still display low commitment to environmental reporting, and are hesitant to be transparent about and accountable to their environmental effects (Carrots and Sticks, 2013; Silva, 2008; Vuorela, 2014). Moreover, companies are free to choose what and how to disclose (Ahmed & Sulaiman, 2004; Odera, 2014; Peiyuan, 2005). This causes quality problems such as comparability and consistency, over time and across companies (De Villiers and Van Staden, 2012).

Even though in some countries companies are mandated to disclose information on their CSR (including environmental information) aspects, the mandatory requirements of such disclosures do not detail specific information to be disclosed by companies. Instead, companies are given the flexibility to provide such information (Haji, 2013). Thus, the lack of specific, formal national and international regulations seems to allow companies much flexibility in how they carry out their social and environmental reporting activities and allow them to use guidelines in a biased manner (Haji, 2013; Michelon *et al.*, 2015). As a result, there is a lack of completeness in social and environmental disclosure (Michelon *et al.*, 2015), and such disclosure varies significantly in terms of information, content, and length (Said, Omar and Abdullah, 2013).

It was recognized that quality of reporting may significantly affect the decision quality of stakeholders, as disclosure quality limitations such as lack of completeness, inconsistency and incomparability might restrict stakeholders' ability to utilize the information to assist their decision making (Brink, Haines, Owen, Smith, & Whitaker, 1997; O'Rourke, 2004). In particular context of environmental disclosure, different stakeholders need to use environmental information when they make their decision (Suttipun and Stanton, 2012; Villiers and Staden, 2011), thus the quality of environmental reporting (as compared to its quantity) is important (Sulaiman *et al.*, 2014).

It was argued that measuring the quality of disclosure is important and that investigating only the volume of disclosure can be misleading (Hassan, 2010; Hooks and van Staden, 2011), as investigating disclosure quality adds a further dimension to

the evaluating of environmental disclosure (Hooks and van Staden, 2011). Despite this, majority of previous studies concerned with environmental disclosure concentrated only on the quantity of disclosure but scant attention has been given to the quality of such disclosure (Aburaya, 2012; Ahmad and Haraf, 2013; Chatterjee and Mir, 2008; Cuesta and Valor, 2013; Eltaib, 2012; Hassan, 2010; Haji, 2013; Michelin *et al.*, 2015; Rupley *et al.*, 2012; Sulaiman *et al.*, 2014).

From literature review, it is noted that, with the exception of a few studies (e.g. Aburaya, 2012; Ahmad and Haraf, 2013; Ane, 2012; Belal, 2000; Brammer & Pavelin, 2006, 2008; Comyns and Figge, 2015; Cormier, Magnan & Van Velthoven, 2005; Cuesta and Valor, 2013; Darus, Hamzah and Yusoff, 2013; Dong, Fu, Gao and Ni, 2015; Eakpisankit, 2012; Eljayash, 2015; Eljayash *et al.*, 2012; Haji, 2013; Hassan, 2010; Harun, Abdul Rashid and Alrazi, 2013; Hooks & Van Staden, 2011; Lu *et al.*, 2015; Michelin *et al.*, 2015; Oba and Fodio, 2012a; Rupley *et al.*, 2012; Sulaiman *et al.*, 2014; Wiseman, 1982), who focus on disclosure quality, previous social and environmental disclosure studies were not able to capture the quality of the disclosure. Thus, assessment of environmental disclosures quality remains a rather controversial issue, and there is a scarce of literature regarding social and environmental disclosure quality (Aburaya, 2012; Michelin *et al.*, 2015; Sulaiman *et al.*, 2014). In addition, prior literature on social and environmental disclosure quality suffer from methodological limitations, as most of these studies used disclosure quantity measures to assess the quality of disclosure. This approach was criticized as it does not sufficiently determine the quality of information (Michelin *et al.*, 2015). Sulaiman *et al.* (2014) stressed that the quality of environmental information

reported should be considered. Thus this study contributes to fill this gap in literature by examining environmental disclosure content-quality rather than its quantity.

Another issue of environmental disclosure that did not received adequate attention in prior literature is media of reporting. It was recognized that, firms use other media along with annual reports to disclose their social and environmental information (Buhr, 1994; Gray, Javad, Power and Sinclair, 2001; Zeghal and Ahmed, 1990). Corporations could communicate corporate social responsibility information through a number of reporting vehicles including annual reports, social and environmental reports, sustainability reports and corporate websites among others (Haji 2013; Islam and Deegan, 2010).

The different reporting vehicles send different messages (Buhr, 1994; Zeghal and Ahmed, 1990). Despite this, the majority of previous studies relating to social and environmental disclosure have covered a single media of reporting, mostly annual reports (e.g. Aburaya, 2012; Abd Rahman, Zain and Al-Haj, 2011; Adams, Hill & Roberts, 1998; Bayoud, Kavanagh and Slaughter, 2012; Campbell, 2000; Campbell, 2004; Donovan & Gibson, 2000; Eljayash *et al.*, 2012; Eljayash *et al.*, 2013; Gray *et al.*, 1995a; Hackston & Milne, 1996; Haji, 2013; Harte & Owen, 1991; Hewaidy, 2016; Kamla, 2007; Oba and Fodio, 2012a,b; Pahuja, 2009; Said *et al.*, 2013; Sulaiman *et al.*, 2014; Zain, 1999), whereas there is a lack of studies addressing disclosure in other mediums such as stand-alone reports (Hassan, 2010; Sapkauskiene and Leitoniene, 2014) and corporate websites (Suttipun and Stanton, 2012).

It was argued that focusing on a certain medium of reporting for examination of environmental reporting practices and omitting the other mediums used by the companies may lead to unclear and imprecise picture on the actual state of practices (Alias, 2001; Belal & Momin, 2009; Buhr & Freedman, 2001; Guthrie, Cuganesan, & Ward, 2008; Kamla, 2007; Roberts, 1992; Unerman, 2000; Zeghal & Ahmed, 1990). The existence of stand-alone reports might influence corporate social responsibility disclosure (CSR) in annual reports. It is possible that firms that publish stand-alone reports such as social responsibility reports or environmental reports could decrease the amount of social and environmental information in their corporate annual reports based on that this information is separately disclosed in stand-alone reports. As such, by neglecting the stand-alone reports and focusing only on the annual reports may lead to misleading results (Haji, 2013; Hassan, 2010).

In order to paint a complete picture of environmental reporting practices, there is a need to examine beyond annual reports and to include environmental disclosures in other mediums (Ahmed & Sulaiman, 2004; Djajadikerta and Trireksani, 2012; Haji, 2013; Oba and Fodio, 2012a; Smith, Yahya, & Amiruddin, 2007; Zeghal and Ahmed, 1990). In the literature, a few studies have combined more than one reporting medium. However, most of the studies that covered mediums other than annual reports did not analyze the other mediums separately; instead, they were analyzed as additional sources (Sapkauskiene and Leitoniene, 2014). In this regards, previous studies have suggested comparison between different reporting mediums. For example, Zeghal and Ahmed (1990) recommended that future research work covers other mediums, and to answer question such as: "How are disclosures through annual reports compared with other mediums?".

Belal and Momin (2009) recommended researchers to answer the question: “Are there any significant differences between different mediums used for CSR in emerging economies?”

Thus, there appears to be a gap in the literature in respect of environmental disclosure studies that compare different reporting mediums, as there are very few previous studies that have compared environmental disclosures made in various reporting mediums. Moreover, no study has compared between different media based on the quality of disclosure. This present study attempts to fill this gap in literature.

One of the most important issues encounters researchers in disclosure related studies is in identifying and understanding the factors that influence managers' decisions regarding disclosure, as it can be beneficial in predicting disclosure levels, and thus enhancing the quality of firms' reports in terms of non-financial information (Hossain and Reaz, 2007). Adams (2002) indicated that an understanding of the factors that influence disclosure is important to improve accountability. As understanding determinants of disclosure assists in; improving extensiveness of reporting, improving quantity and quality of reporting by companies, improving comprehensiveness of reporting.

However, the determinants of CSR disclosure are a research area receiving increasing attention, but this issue in emerging countries is still not clearly defined and remains controversial in the existing literature (Gibson and O'Donovan, 2007; Kansal *et al.*, 2014). Summerhays and De Villiers (2012) argued that in spite of the insights provided in the prior literature, disclosure decisions can be complex and are

still not fully understood. Specifically, the prior studies in the literature generated inconsistent results regarding the presence and direction of relationships between environmental disclosure and a number of factors that influence environmental disclosure (e.g. Ahmed & Nicholls, 1994; Al-Tuwaijri, 1998; Clarkson, Li, Richardson and Vasvari, 2008; Craswell & Taylor, 1992; Purushothaman, Tower, Hancock, & Taplin, 2000; Roberts, 1992; Silva, 2008; Ying, 2006; Zhang, Guo, Li, & Wang, 2009). Thus, this study aims to investigate the relationship between environmental disclosure content-quality and a number of factors, particularly, company size, type of company, close to market, ownership concentration, foreign ownership, institutional ownership, state ownership, profitability, leverage, multi-nationality, environmental certification, and membership of industry's associations. In essence, these factors are proposed to influence the content-quality of environmental disclosure.

However, the literature points out that the majority of previous studies concerned with social and environmental reporting have been conducted in the developed world, but comparatively limited studies have been undertaken in the developing countries (Eljayash *et al.*, 2013; Joseph *et al.*, 2014; Kansal *et al.*, 2014; Kaur, 2015; Lu and Abeysekera, 2014; Yusoff and Othman, 2013). The literature revealed that social and environmental disclosure in developing nations is still a relatively new practice (Ahmad and Hossain, 2015; Djajadikerta and Trireksani, 2012; Kaur, 2015; Lu and Abeysekera, 2014; Mughal, 2014). In terms of disclosure quality, prior studies that conducted in developing countries revealed a low level of quality of environmental disclosure (cf. Ahmad and Haraf, 2013; Ane, 2012; Eljayash, 2015; Eljayash *et al.*, 2012; Haji, 2013; Harun *et al.*, 2013; Oba and Fodio, 2012b; Sen *et*

al., 2011; Sulaiman *et al.*, 2014). Thus, there is a need for more studies into this kind of disclosure in the context of developing countries.

In terms of industry, the oil and gas industry is among the industries with the greatest impacts on the environment (IEA, 2015). The overall environmental effects of the petroleum operations on the natural environment are very high, as the operations of this industry cause air pollutions and responsible for the waste they emit in the sea which is very disastrous for the life under sea (Mughal, 2014). The oil and gas industry is considered a main source of environmental problems, as its operations involve many potential negative environmental effects (Ariweriokuma, 2009; Frynas, 2009).

Several vital environmental incidents that occurred in the oil and gas industry worldwide have revealed the significant impact of this industry's activities on the environment (Hossain *et al.*, 2006), which in turn have contributed to increasing concern of public and other stakeholders regarding oil and gas companies' environmental impacts (Eljayash *et al.*, 2012; Frynas, 2009; Odera, 2014; Sustainability & UNPE, 1999). As a result, oil and gas companies are facing increasing pressure to disclose information regarding their environmental performance (Odera, 2014). Despite this, there are a few studies examined environmental disclosure in oil and gas industry (cf. Alciatore and Dee, 2006; Al-Drugi and Abdo, 2012; Barr, 2007; Bose, 2006; Dibia and Onwuchekwa, 2015; Eljayash *et al.*, 2012; Eljayash *et al.*, 2013; Guenther, Hoppe and Poser, 2007; Heflin and Wallace, 2014; Oba and Fodio, 2012b; Patten, 1992; Summerhays and De Villiers, 2012; Sustainability Ltd. & UNEP, 1999). Moreover, with the exception of

Oba and Fodio (2012a) and Eljayash *et al.* (2012), there are no studies that have analyzed the quality of environmental disclosure in oil and gas industry, especially in the developing countries in which the adverse effects of oil and gas companies are greater (Abdalla and Siti-Nabiha, 2015).

All these create a demand for examining the environmental disclosure quality of oil and gas companies in developing countries. Hence, this study intends to fill this knowledge gap by examining the content-quality of environmental disclosure made by oil and gas companies in developing countries.

Therefore, the current study attempts to fill the gaps in the literature by examining corporate environmental disclosure content-quality (rather than its quantity), concentrating on environmental disclosure made on the three main mediums of reporting (namely, annual reports, stand-alone reports and corporate homepages). In addition, this study compares and contrasts corporate environmental disclosure practices between the three mediums of communication with respect to the content-quality of information disclosed. The study also extends previous research of corporate environmental disclosure by investigating some factors that potential to influence the content-quality of environmental disclosure, such as type of company (independent or constrain company) and industry' association membership which have never been examined in the related literature.

1.3 Research Questions

This study focuses on environmental disclosure content-quality in the three main reporting mediums of environmental information (namely annul reports, stand-alone

reports, and corporate homepages). Precisely, this study aims to provide answers to the three following questions:

1. What is the level of environmental disclosure content-quality of oil and gas companies in developing countries?
2. Are there any differences between environmental disclosure in annual reports, stand-alone reports and corporate homepages of oil and gas companies in developing countries, in terms of content-quality?
3. What are the relationships, if any, between company characteristics (namely company size, type of company, close to market), company ownership structure (namely ownership concentration, foreign ownership, institutional ownership, state ownership), economic performance of company (namely profitability, leverage), multi-nationality, environmental certification, membership of industry's associations and environmental disclosure content-quality of oil and gas companies in developing countries?

1.4 Research Objectives

The objectives of this study are as follows:

1. To determine the level of environmental disclosure content-quality of oil and gas companies in developing countries.
2. To investigate whether there is any significant difference between different reporting mediums (namely, annual report, stand-alone reports, and corporate homepages) regarding their environmental disclosure content-quality of oil and gas companies in developing countries.
3. To determine the nature and extent of relationships between certain company characteristics (namely, company size, type of company, close to market),

company ownership structure (namely ownership concentration, foreign ownership, institutional ownership, state ownership), economic performance of company (namely profitability, leverage), multi-nationality, environmental certification, membership of industry's associations and the level of environmental disclosure content-quality of oil and gas companies in developing countries.

1.5 Motivation of the Study

The key motivation of this research is the growing of global concerns of environmental issues and increasing of public concern about the businesses activities and the impact of these activities on the environment. Specifically, the potential adverse impact of oil and gas industry to the environment is the major motivation for this study. The low level of disclosure quality revealed by previous studies (e.g. Ahmad and Haraf, 2013; Barr, 2007; Eljayash *et al.*, 2012; Eltaib, 2012; Ane, 2012; Belal, 2000; Elijido-Ten, 2004; Rizk, Dixon & Woodhead, 2008; Sen *et al.*, 2011; Yusoff and Darus, 2014; Yusoff and Othman, 2013) is a motivation for this study to examine a more recent environmental disclosure quality (EDQ) level.

The majority of environmental disclosure research is confined to consideration of the quantity, rather than quality, of information disclosed (Rupley *et al.*, 2012). This called for environmental disclosure studies dedicated to the investigation of aspects beyond the disclosure level, more specifically; Silva (2008) argued that environmental reporting quality research needs to be developed further.

In respect of reporting media used for environmental disclosure, previous studies emphasized the crucial need to examine beyond the annual reports and to include other media, such as stand-alone environmental reports, the Internet and newsletters (cf. Ahmed, 2004; Ahmed & Sulaiman, 2004; Smith *et al.*, 2007; Ying, 2006). Moreover, Vuorela (2014) suggested conducting a comparison study of environmental disclosures in different reporting media such as annual reports and corporate websites.

The presence of a gap in literature and the lack of evidence in the context of developing nations is a key motivation for this study. Yusoff and Othman (2013) stated that a focus on more than one country practices is deemed to offer better understanding about the reporting practice. Haji (2013) suggested research involving various developing countries to explore the presence of corporate legitimation exercises in the developing countries.

1.6 Significance of the Study

This study provides some important theoretical and practical contributions as discussed below.

1.6.1 Theoretical Contribution

This study contributes to literature dedicated to environmental disclosure by addressing each of the two major themes: the quality of environmental disclosure in different mediums of disclosure (annual reports, stand-alone reports and company websites), and the determinants of quality of ED. Prior environmental disclosure literature has not focused much on disclosure quality; instead, it concentrated on the

quantity of disclosure. The present study seeks to fill an existing gap in the pertinent literature by considering the issue of environmental disclosure quality (rather than quantity). Assessing the quality of the environmental reporting enables an identification of the strengths and weaknesses in current reporting practice and advances our understanding of current disclosure practice by oil and gas industries in developing countries.

In addition, contrary to the most available literature that only focuses on sole medium of environmental disclosure (mostly annual report), the current study contributes to the literature by covering most common vehicles of environmental disclosure, particularly, annual reports, stand-alone reports and corporate homepages. This study also fills the void in prior environmental disclosure literature regarding whether various reporting mediums vary regarding their disclosure quality. Although, a study conducted by Hooks and Van Staden (2011) combined between these three mediums in addition to other mediums, it did not aim to compare extent or quality of environmental reporting between companies or among the different reporting mediums; instead, it compared the results of the different content analysis methods. Thus, this study extends the environmental disclosure literature by looking into the varying disclosure quality of the main reporting mediums.

It was recognized that companies use different mediums to disclose their environmental information and reading all mediums used by a company to present its environmental information is difficult task and time consuming for readers. Previous studies revealed that different environmental reporting vehicles send different messages (cf. Buhr, 1994; Zeghal & Ahmed, 1990).

This study views environmental disclosure practices from a wide-ranging perspective, namely political economy and social perspectives, which have been suggested to help explain social and environmental disclosure practices (cf. Gray, Owen and Adams, 1996; Nurhayati, Brown, & Tower, 2006). Although there is great academic interest in environmental disclosure, no inclusive theoretical framework has yet been developed which can interpret corporate environmental disclosure in terms of the determinants. By integrating political economy theory, stakeholder theory, and legitimacy theory explanations, this study offers a theoretical framework for investigating the environmental disclosure practices, and provides empirical evidence on the quality of environmental disclosure and its influencing factors. In this regard, the study also extends the framework of environmental disclosure through its examination of the selected dependent variable (i.e. environmental disclosure quality) and the two independent variables that were not previously subject to empirical test (i.e. type of company, and membership of industry associations).

The present study also contributes to the environmental disclosure literature by centering on the ED practices of specific sector (i.e. the oil and gas industry) in the DCs. It was argued that, in order to enhance our understanding on environmental disclosure behavior, it is important to focus on a specific industry (Gray *et al.*, 1995a; Ahmad and Haraf, 2013). Thus, this study contributes to environmental disclosure literature as it provides insight into the environmental disclosure practices of oil and gas companies within developing countries, where there are limited published studies.

1.6.2 Practical Contribution

Understanding the ED practices of oil and gas companies enables various interested parties, such as, investors, creditors, governments, regulators and standard setter, and environmental groups to determine the quality of ED, and to assess the requirements for environmental information. It is hoped that the findings of this study serve as input towards the development of improved regulations concerning environmental reporting for the oil and gas industry, and provide guidelines to the regulators to make relevant decisions on environmental information items to be incorporated in the regulatory standards.

For information users, it is important to know which medium/s is/are better to be relied on to help make decisions. It was also recognized that quality of reporting may significantly impact the stakeholder's decisions in terms of quality (Brink *et al.*, 1997). So, it can be argued that better source of information is the medium that has higher level of quality. In addition to determining the overall quality of environmental disclosure through different ED mediums (namely, annual reports, stand-alone environmentally-related reports, and corporate homepages), this study also determines the level of quality of each medium and conducts comparisons between them. This is to determine the best mediums with respect to their quality. Thus, the findings of this study will facilitate an in-depth understanding of the selection of disclosure medium of environmental information.

1.6.3 Methodological Contribution

This study also makes a methodological contribution to the literature by constructing an environmental disclosure quality index, which can be considered as

comprehensive enough –to some extent- and suitable for oil and gas industry, as it includes specific environmental disclosure items for this industry. In this respect, the current study extends the categories of environmental disclosure used by most of prior studies into “Health and Safety” category to suit the oil and gas industry which gives a great attention to this category as a part of environmental aspects. This extended checklist instrument provides new insights to determine the quantity and quality of environmental disclosure in oil and gas companies. Also, this study contributes by its analysis of firms located in various continents operating globally, which in turn, will furnish a greater level of diversity and robustness to the analysis results. Furthermore, this study also considers the practices of a relatively large sample (116) of oil and gas companies from nineteen developing countries.

1.7 Scope of the Study

This study investigates the environmental disclosure content-quality of oil and gas companies in the developing countries. The study covers the main mediums of environmental reporting (particularly, annual reports, stand-alone related environmental reports – environmental and/or social responsibility and/or sustainable reports, and additional information on homepages of internet) in the year 2010. However, other mediums of disclosure are not covered by this study.

1.8 Organization of the Study

This study is divided into seven chapters. Following the introductory chapter (i.e. chapter1), chapter two reviews the literature on previous studies, issues and other relevant materials. In chapter three, the theoretical framework is formed, within which the environmental disclosure can be examined. To help in defining factors that

could affect the quality of environmental disclosure, this chapter discusses triplex theoretical framework, which is derived from political economy theory, stakeholder theory, and legitimacy theory. Based on the perspectives of these theories and findings of previous studies discussed in the preceding chapter, hypotheses are then developed. Chapter four describes the methodology that is employed in the study. Chapter five reports the findings. Chapter six provides a discussion of the results and, finally chapter seven offers brief review for entire thesis, highlights the implications of the results and the limitations of the study, and recommendations and suggestions for future research.



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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature relating to social³ and environmental disclosure in developing countries and worldwide. The current study attempts to investigate the issues of quality of environmental disclosure, differences in disclosure quality among various reporting mediums of environmental information, and factors influencing the quality of environmental disclosure. To gain deep understanding of these issues as per extant of pertinent research, this chapter focuses on three aspects of social and environmental disclosure they are; the level of quantity⁴ and quality of disclosure, the mediums used for such disclosure, and the factors influencing the disclosure practices. However, based on review of previous studies, gap in previous literature is recognized and limitations of previous studies are defined. Therefore, some concerns have been taken into account in the development of this study.

2.2 Environmental Accounting

Accounting is the language of finance and is a service activity. In the modern era, accounting has witnessed rapid improvement and has become a means to serve the society, rather than just to serve owners and managers of projects (Jomah, 1984). The American Accounting Association (AAA) has recognized the social dimension for accounting by determining the accounting objectives including the social aspect. Based on the statement of basic accounting theory prepared by a committee

³According to Leary (2003), this is because CED was examined in CSR studies. Hence the findings of these studies have implications for CED study.

⁴ Because reporting volume/ quantity is recognized as an indicator of (but does not fully reflect) reporting quality (Freedman & Stagliano, 1992).

authorized by the AAA, the objectives of accounting are determined as: “1) Making decisions concerning the use of limited resources, including the identification of crucial decision areas, and determination of objectives and goals; 2) Effectively directing and controlling an organization’s human and material resources; 3) Maintaining and reporting on the custodianship of resources; 4) Facilitating social functions and controls” (AAA, 1966).

An extensive concern regarding the environment has resulted for the accounting role in environmental issues (Baba, 2004; Maunders & Burritt, 1991). Consistently with the increase in public concern of environmental issues, environmental accounting (EA) practice has become an attractive area of research and received attention from the researchers (Eltaib, 2012).

The past two decades have witnessed a gradually increasing demand for economic and financial data regarding the environmental and natural resources (Hamid, 2002). In this regard, accounting has a key role in the disclosure of environmental responsibility of various entities (industrial, commercial, or service) at the entire levels (micro or macro). Accounting has become involved in the achievement of new objectives like the measurement and evaluation of potential/actual environmental impacts of projects and organizations. These objectives are of great significance in that they allow information users to reach environmentally sound decisions (Bose, 2006). Thus, traditional accounting has extended to cover a new type of accounting that focuses on the environmental impacts of an organization’s activities, which is known as Environmental Accounting. Environmental accounting (also called

Ecological, Natural resource, Green accounting) has a key role in facilitating environmental data to various users in all levels (Hamid, 2002).

Environmental accounting is defined as “management accounting practices that enable the incorporation of environmental cost and benefit information into business decisions” (United States Environmental Protection Agency [USEPA], 2000, p. 35).

Environmental accounting is also defined as “the identification, measurement, and allocation of environmental costs, the integration of these environmental costs into business decisions, and the subsequent communication of the information to a company’s stakeholders” (Institute of Management Accountants in the USA, as cited in Jahamani, 2003, p. 37).

Schaltegger & Burritt (2000) defined EA as “a subset of accounting which involves activities, methods and systems; and deals with the recording, analysis and reporting of environmentally induced financial impacts and the ecological impacts of a defined economic system such as an organization, a country or region” (Schaltegger & Burritt, 2000, as cited in Niap, 2006, p. 20). Rahahleh (2011) defined environmental accounting as “ a science looking on how the environmental aspects affect the conventional accounting system and whether it is an effective tool to measure and evaluated the environmental aspects of facilities”(p. 127).

There are many advantages for a company that adopts an environmental accounting. The most important advantages are; obtaining clear information about environmental costs for control and decision-making and meeting the ongoing requirements of various stakeholders including the government, investors, lenders, banks, non-

governmental institutions, among others, detecting potential areas for savings and environmental improvements, and proper management of resources in an environmentally sound manner that will lead to direct returns including cost savings and reductions, and/or indirect returns like superior organization goodwill and reputation (Bosshard, 2003; Hamid, 2002; and USEPA, 1995).

Environmental accounting research, as a part of the broader area of social and environmental accounting research, has been traced decades ago. Since the mid-1990s, studies have increasingly focused on issues regarding social and environmental accounting. Focus of many parties (e.g. industry bodies, professional accounting bodies, corporations, and governments) to the area increased (Deegan, 2002). While some authors argued that research in social and environmental accounting is new, Deegan (2002) emphasized that such research is not new, but the degree of attention is higher than in the past.

While environmental accounting witnessed a rapid growth in developed countries, majority of the companies in developing countries still lag behind in their understanding, development and implementation of environmental accounting (Lee, 2001). Hence, it is interesting to study environmental accounting or one of its aspects in the context of developing countries.

At the corporate level, environmental impacts are included in EA records, measures, analyses and reports to add to the corporate environmental strategy effectiveness. Corporate environmental accounting involves “provision of environmental performance related information to stakeholders both within, and outside, the

organization” (Deegan, 2003, p.10). Thus, disclosing information relating to environmental aspects is considered as one of significant issues in relations to environmental accounting (Eltaib, 2012). This study focuses on corporate environmental reporting, which is discussed in the following section.

2.3 Environmental Reporting

Environmental reporting is defined as “the information that is required to be disclosed by regulatory rule or because management considers it useful to those outside the enterprise and discloses it voluntarily” (Financial Accounting Standards Board [FASB], 1986, SFAC No. 1, par.7), or as “the set of information items that relate to a firm’s past, current and future environmental management activities and performance” and “information about the past, current and future financial implications resulting from a firm’s environmental management decisions or actions” (Berthelot, Cormier & Magnan, 2003, p. 2).

According to Islam *et al.* (2005) environmental disclosure is “an umbrella term that describes the various means by which companies disclose information on their environmental activities”. Lodhia (2006a) has defined the Corporate Environmental Reporting (CER) as “a process through which companies often disclose environmental information to their stakeholders to provide evidence that they are accountable for their activities and the resultant impact on the environment”. Environmental disclosure is also defined by Kuo and Chen (2013) as “a set of information items that relate to a firm’s past, current, and future environmental management activities and performance” (p. 1467), and by Yusoff and Othman (2013) as “any written passage about company’s environmental issue and activity”

(p. 1720). For the purpose of this study, environmental disclosure is defined as a process of communicating the information on environmental issues through various reporting mediums including; annual report, separate stand-alone environmental-related reports (i.e. environmental report, social responsibility report, sustainability report), and corporate homepage of Internet.

Environmental reporting, as a part of social responsibility reporting, first received considerable attention in the 1970s (Barr, 2007; Islam *et al.*, 2005), but slowed down in the 1980s because of the attention shift towards economic issues like unemployment and recession (Barr, 2007). In the late 1980s, social reporting resurfaced with a concentration on issues regarding the environment (Kolk, 2006). It has had a rapid expansion in the 1990s and grew to develop into one of the top significant reflections of interactions between business and environment (Gray and Bebbington, 2001; Islam *et al.*, 2005).

Environmental reporting continued its diffusion and improvement as a result of the governments' focus on heavy polluting industries (including oil and gas industry) and the introduction of some related rules (KPMG and UNEP 2005). However, in oil and gas context, environmental disclosure has increased following the Valdez Oil Spill in 1989 (Patten, 1992).

Environmental disclosure occupies a prominent place within the firm's disclosure strategy (Beets and Souther, 1999). Environmental information disclosure is an attractive subject as information itself entails living quality (Ahmad *et al.*, 2003). Investors require environmental information for their assessment of the effects of

environmental risks upon future operations in terms of finance and investment. Because cost implication - which has relevance to present shareholders- could affect future earnings, new investors are aware of (among other) environmental contingent liabilities (Alias, 2001). Sumit (2004) revealed that, environmental disclosure is perceived as a mechanism used to improve image of the organization. Thus, disclosures on environmental performance help organizations to manage relationships with their stakeholders (Vuorela, 2014). This reveals the importance of disclosure of environmental information for investors and organizations.

Consistent with the increase in public concern of environmental issues, environmental disclosure has equipped its important role. To help companies to report on their environmental aspects, many international organizations issued guidelines and principles. For example, the CERES Principles laid down by Coalition Environmentally Responsible Economies in 1992, the PERI Guidelines laid down by the Public Environmental Reporting Initiative in 1993, the ISO14000 Standard established by the International Organization for Standardization in 1996, and the Sustainability Reporting Guidelines established by the Global Reporting Initiative in 1999 and reviewed in 2002 and 2006,

2.3.1 Environmental Reporting as a Distinct Category of Social Responsibility Reporting and Sustainability Reporting

Corporate environmental reporting is a part and an important element of corporate social responsibility reporting (Brady, 2005; Hackston and Milne, 1996; Said *et al.*, 2013). Social responsibility reporting, including two dimensions namely environmental and social aspects, was considerably given attention in the 1970s, later on, in 1980s, its growth has declined, and thereafter, it re-emerged in the late 1980s

with more focus on environmental issues. Since that time onwards, social and environmental reporting continued its growth. Nevertheless, from 2002, reporting of social and environmental performance has been extended to cover another dimension namely economic issue. A new type of report including all three dimensions (environment, social and economy) has emerged, which is called sustainability, or triple bottom line (TBL) reports (Barr, 2007).

Thereafter, instead of publishing separate social or environmental reports, companies started publishing sustainability reports. Palenberg, Reinicke and Witte (2006) indicated that in 2005, of the largest 250 multinational companies, only 13% published pure environmental reports, while over 54% published sustainability reports. However, choosing to publish pure environmental report, social responsibility report or sustainability report varies from one company to another.

The environment is always seen as a distinct category of CSR (Hibbitt, 2003), and CED is also seen as a subdivision of the larger area of corporate social responsibility disclosure (Tantish, 2003), and additionally, CED is a subcategory of sustainability reporting (see Figure 2.1). While some previous studies were concerned with a broad area of sustainability reporting (cf. Aras & Crowther, 2009; Carrots and Sticks, 2013; Chiong, 2010; Harun *et al.*, 2013; Joseph *et al.*, 2014; Kolk, 2003; Kolk, 2006; Sawani *et al.*, 2010; Sobbani *et al.*, 2012; Innocent, Gloria and Benjamin, 2015; Scott & Jackson, 002), some other studies (e.g. Abd Rahman *et al.*, 2011; Adams *et al.*, 1998; Amran, & Devi, 2008; Barr, 2007; Bayoud *et al.*, 2012; Belal, 2001; Bowrin, 2013; Branco & Rodrigues, 2008; Carroll, 1999; Cormier & Gordon, 2001; Darus *et al.*, 2013; Das, Dixon and Michael, 2015; Giannarakis, 2014; Gray *et al.*, 2001;

Guthrie & Parker, 1990; Hackston, & Milne, 1996; Haji, 2013; Hassan, 2010; Imam, 2000; Kamla, 2007; Kamla and Rammal, 2013; Lipunga, 2015; Lu & Abeysekera, 2015; Michelin *et al.*, 2015; Milne & Adler, 1999; Momin and Parker, 2013; Muttakin and Khan, 2014; Naser & Hassan, 2013; Patten, 1991; Perez , 2015; Reverte, 2009; Roberts, 1992 ; Roitto, 2013; Said *et al.*, 2009; Setyorini and Ishak, 2012; Tantish, 2003; Tilt, 1994; Vilar and Simao, 2015; Williams & Pei, 1999; Yusoff, Mohamad and Darus, 2013; Zeghal & Ahmed1990) narrowed their concerns to corporate social responsibility disclosure.

However, other researchers (e.g. Aburaya, 2012; Al-Drugi and Abdo, 2012; Al-Tuwaijri, Christense and Hughes, 2004; Belal, 2000; Brammer & Pavelin,2006, 2008 ; Buhr, 1994; Buhr & Freedman, 2001; Campbell, 2004; Chang, 2013; Cormier and Magnan, 2003; Cormier *et al.*, 2005; De Villiers and Van Staden, 2012; Deegan & Gordon, 1996; Deegan & Rankin, 1996; Eljayash *et al.*, 2013; Frost, 1999; Islam and Islam, 2011; Kaur, 2015; Pahuja, 2009; Patten, 2002a; Rupley *et al.*, 2012; Sulaiman *et al.*, 2014; Tilt, 2001a,b; Wiseman, 1982; Yusoff and Othman, 2013) restricted their analyzing to corporate environmental disclosure (CED).



Figure 2.1
The Relationship between Environmental, Social and Sustainability Reporting

While the present study does not expand its concern to cover social responsibility or sustainability reporting as a whole, the literature on sustainability and social disclosures will be reviewed as such scope could be viewed as general umbrella of the literature of environmental disclosure. However, empirical analysis of this study will concentrate on environmental information. Thus, mediums that were mostly used by organizations to report their environmental issues (environmental reports, social responsibility reports, and sustainability reports) as well as annual reports and corporate homepages are analyzed. Such mediums were discussed latter in this chapter.

2.3.2 Importance of Environmental Reporting

Based on stakeholder and legitimacy theories, firms use social and environmental disclosures to improve their image in the eyes of different stakeholder groups and public in general and in turn gain their legitimacy for existence (Hossain, Al Bir, Tarique and Momen, 2016; Khlif, Guidara and Souissi, 2015; Kuo and Chen, 2013; Noodezh and Moghimi, 2015). Several earlier studies revealed that firms, especially those operating in environmentally sensitive industries, disclose social and environmental information to promote/ enhance their images and reputations and in turn for the legitimization of their societal existence (e.g. Deegan and Gordon, 1996; Deegan and Rankin, 1996; Deegan, Rankin, & Tobin 2002; Khlif *et al.*, 2015; Kuo and Chen, 2013; Neu, Warsame & Pedwell, 1998; Patten, 1992; Yusoff and Lehman, 2009). Thus, social and environmental disclosure is considered a tool which could help companies to influence society's perceptions toward corporate operations (Haji, 2013).

Moreover, social and environmental disclosure is considered as an obligation and a stakeholder right (Gray *et al.*, 1995a) as this type of information is utilized by different groups of stakeholders to assist their decision making (O'Rourke, 2004). It was indicated that environmental disclosure is a significant factor in investor decision-making (cf. Sen *et al.*, 2011), and a medium for managing, negotiating or manipulating stakeholders (Roberts, 1992). Furthermore, previous studies evidenced several benefits a company could potentially gain as a result of its social and environmental disclosure. For example, competitive advantage has been identified as one of the benefits that can be associated with the disclosure of corporate environmental information (Meek, Roberts and Gray, 1995). Magness (2010) suggested that investor reactions were more favourable to companies with prior environmental disclosure. Rattanaphaphtham and Kunsrison (2011) found that positive opinion of customers, community support and employees' satisfaction could be gained by disclosure of information about environmental events. Yin (2012) evidenced that quality CSR disclosure increases a company's reputation and strengthens its competitiveness. Perez (2015) argued that CSR reporting is useful to generate corporate reputation, while the information quantity and quality is crucial to the success of CSR reporting. Supporting this, Lu, Abeysekera and Cortese (2015) indicated that CSR reporting quality positively influences corporate social reputation. Khlif *et al.* (2015) revealed that social and environmental disclosure has a significant positive effect on corporate performance.

Some previous studies suggested economic benefits for social and environmental disclosures. For example, eco-efficient and proactive environmental strategies and activities have been found to lead to higher profitability and greater corporate value

(Clarkson, Li, Richardson and Vasvari, 2011). Lassaad and Khamoussi (2012) investigated the association between social and environmental reporting and earnings quality (as proxied by earnings persistence) of French companies. They evidenced that earnings quality is positively affected by social and environmental disclosure. Pled and Iatridis (2012) examines the association between the quality of reported CSR information and the cost of equity. Their findings indicated that companies with a high CSR score are likely to display lower cost of equity. They explained that high quality disclosure would improve investors' perceptions and would be expected to lead to a lower cost of equity.

Yin (2012) indicated that the corporate social responsibility reporting has a positive influence on the corporate financial performance in the subsequent year. Yusoff *et al.* (2013) investigated the potential effect of corporate social responsibility reporting on firm financial performance of the leading 30 public listed companies in Malaysia. They found a significant association between corporate social responsibility reporting and the financial performance in the next year.

Mohamad, Salleh, Ismail and Chek (2014) investigated effect of quality of non-financial (including CSR) information disclosure on firm profitability in Malaysia. They provided evidence that, quality of CSR disclosure able to influence the firm profitability. Saka and Oshika (2014) examined the impact of corporate carbon emissions and disclosure on corporate value of Japanese companies. They found that corporate carbon emissions have a negative relation with the market value of equity, and the disclosure of carbon management has a positive relation with the market value of equity. They argued that capital market investors cannot recognize corporate

environmental activity in the absence of corporate disclosure. Recently, Dong *et al.* (2015) examined the economic consequences of nonfinancial (CSR) disclosure quality. They found that higher quality CSR disclosures translate into economic consequences such as better pricing terms and lower cost of capital and greater stock liquidity. More recently, Alotaibi and Hussainey (2016) examined the impact of CSR disclosure quantity and quality on value of 171 non-financial firms listed in the Saudi stock market. The results showed a positive association between CSR disclosure quality and quantity and market capitalization.

Another benefit of CSR disclosure is that, the CSR disclosure attracts analysts and improves their ability to forecast earnings. This was supported by Cormier and Magnan (2014), who indicated a direct relation between CSR disclosure and financial analysts' information environment, as more CSR disclosure translates into a tighter consensus in earnings forecasts and less dispersion. Cormier and Magnan (2013) suggested that environmental disclosure serves a firm's stakeholders purposes. Particularly, they found that a company's environmental disclosure enriches the information quality of analysts, which in turn enables them to make more accurate estimates, as well as it affects how other stakeholders perceive its legitimacy. In general, it is believed that those companies who ignore the importance of CSD are likely to see the consequences in near future (Mughal, 2014).

2.3.3 Quality of Environmental Disclosure

Nowadays, stakeholders require high quality information with sufficient quantity (Chakroun and Hussainey, 2014). As mentioned earlier, most previous studies have focused on the quantity of disclosure, but a less attention has given to the quality of

disclosure. Quantity and quality are considered two disclosure characteristics. While, disclosure quantity is simply defined as “the extent or amount of disclosed information” (Guthrie, Petty, Yongvanich, & Ricceri, 2004), disclosure quality is a complex and ambiguous concept which must be explained (Rahma and Anis, 2015). It was argued that no universally accepted notion of quality existed (Botosan, 2004). Several definitions of disclosure quality have been suggested in prior literature. For example, disclosure quality has been referred to as the “completeness, accuracy and reliability” (Singhvi and Desai, 1971), “comprehensiveness” (Wallace, Naser, & Mora, 1994), “degree of specificity” (Garcia-Meca & Martinez, 2005 and Tooley & Guthrie, 2007), or “degree of detail” (Hooks & Van Staden, 2011). Verrecchia (1990) stated that the quality of reporting is often related to how the information may influence the beliefs, expectations and even the desires of investors about the transparency and accountability of disclosure. Similarly, Diamond and Verrecchia (1991) stated that the quality of disclosure can be explained by the investor confidence in the information disclosed. According to Imhoff (1992) disclosure quality refers to completeness or full disclosure.

Hopkins (1996) defined the term of “disclosure quality” as the extent to which current and potential investors can easily read and understand the information. Disclosure quality could be defined in terms of information decision usefulness (Beuselinck and Manigart, 2007). Botosan (2004) describes information quality in terms of the usefulness of information: relevance, reliability, understandability, and comparability. Brammer and Pavelin (2006) contend that environmental disclosure quality is not necessarily or directly related to the disclosure quantity and that disclosure quality is more of reporting specific activities, quantifying impacts on

environment, setting formal targets, and being subject to external audit. It could be defined as “information about the reporting entity that is useful to present and potential equity investors, lenders and other creditors in making decisions in their capacity as capital providers” (IASB, 2008). Mouselli, Jaafar and Hussainey (2012) defined the quality of disclosure as the quantity of future-oriented earnings statements in the annual report narrative sections. Disclosure quality also refers to the completeness, accuracy or precision, and reliability features (Abadi and Janani, 2013). It was recognized that information with high quality is a major factor that helps users of information to make rational decisions (Chakroun and Hussainey, 2014).

Despite quantity and quality are two different characteristics of disclosure, many previous disclosure studies used quantity as a proxy for quality (Hussainey and Walker, 2007 and 2009; Mouselli *et al.*, 2012; Schleicher). In the specific context of social and environmental disclosure, most prior studies also used disclosure quantity to measure disclosure quality (Deegan & Gordon, 1996; Deegan & Rankin, 1996; Hussainey and Mouselli, 2010; Michelon *et al.*, 2015). This may be due to the difficulties of measuring disclosure quality (Chakroun and Hussainey, 2014), or because these studies proposed that the disclosure significance can be reflected by the disclosure quantity.

However, many researchers have criticized this approach. For example, Buzby (1975) argued that disclosure level is not the same as its sufficiency; hence, the former cannot measure the overall disclosure quality. Wiseman (1982) argued that the environmental disclosure length does not reflect its quality. Freedman and Stagliano (1992) argued that although the quantity of reporting sheds some light on

the importance of information, it fails to reflect the full communicative content of the information, and as such, it is riddled with limitations in terms of a complete measurement of reporting quality. Deegan and Gordon (1996) argued that the assumption that the significance of a disclosure can be meaningfully represented by the quantity is incorrect. Similarly, KPMG (1999) suggested that disclosure quality is not synonymous with disclosure quantity. Beattie *et al.* (2004) contended that even if the quantity of disclosed information influenced the quality of information, an assessment on disclosure quality could not be based purely on this association. Beretta and Bozzolan (2008) confirmed that richness and quantity of disclosure were two independent dimensions and they revealed that, in assessing narrative disclosure, quantity was not a good proxy for quality. Hussainey and Mouselli (2010) stated that disclosure quantity alone is not a satisfactory proxy to measure disclosure quality, and Chakroun and Hussainey (2014) contended that whilst firms might disclose more information, such information could lack accuracy (Chakroun and Hussainey, 2014). Michelon *et al.* (2015) argued that the disclosure instruments used in previous social and environmental disclosure studies have been built primarily on a checklist of items that capture the amount and variety of disclosure do not sufficiently determine the quality of information. Therefore, quantity or volume of information reported is not appropriate measure for reporting quality, because much information does not mean that it has high quality.

It was argued that some high quality disclosure could be very brief and intensive and not necessarily very long. This makes suggestion of disclosure quantity as a proxy for disclosure quality questionable. Therefore, distinguishing between poor and excellent disclosure of items provides a better measure of disclosure than a simple binary record of the extent of an item, or just some measure of the extent of

disclosure such as the number of sentences (Hooks and Van Staden, 2011). Thus, as the quantity and quality are two different characteristics of disclosure, each concept should be operationalized using different measures. While disclosure quantity could be measured by counting the number of statements, sentences or words related to a specific topic (Guthrie *et al.*, 2004; Milne and Adler, 1999; and Unerman, 2000), these measures are not appropriate to assess disclosure quality, as providing large quantities of disclosure do not necessarily mean high disclosure quality.

As a result of variation of theoretical definitions of disclosure quality, several constructs have been used to measure this concept. In addition to quantity-based measures used in some previous studies (which have been criticized as they are not appropriate for measuring disclosure quality), quality-based measures have also been used. For example, Botosan (2004), Aburaya (2012), Chakroun and Hussainey (2014), Alotaibi and Hussainey (2016) used the qualitative characteristics of information as defined by the International Accounting Standards Board (IASB), namely, comparability, understandability, relevance, and reliability (IASB, 1989). Hooks & Van Staden (2011) also used these characteristics (except reliability) to the quality of disclosure in their study.

Reviewing pertinent prior literature revealed that weighting scheme has been usually used to measure the quality of disclosure. For example, Wiseman (1982) used an indexation procedure based on whether disclosure was monetary/ quantitative; specific non-quantitative; or in general terms. Guthrie and Matthews (1985) utilized rating scheme based on whether the statements reflect well, badly or neutrally on the reporting entity. Guthrie and Parker (1990) examined theme, evidence (monetary,

non-monetary, declarative, none), amount, and location of a disclosure to infer its quality. Gray, Kouhy & Lavers (1995b) added an assessment of whether the disclosure is verified by an independent third party or not. Cormier and Gordon (2001) assessed reporting on a three-point scale allocating a score of three for an item described in quantitative terms, two for a specifically described item and one for an item discussed in general terms, while Hooks *et al.* (2002) used the degree of specificity of the disclosures as a proxy for the quality of disclosure. Beattie, McInnes & Fearnley (2004) measured disclosure quality through examining both the topic (relative amount and spread across topics) and the type (time orientation, financial/non-financial and quantitative/qualitative attributes) of disclosure. Hasseldine, Salama, and Toms (2005) measured quality on a 6 point scale; 0 for nondisclosure to 5 for quantitative data.

However, the literature points out that the dimensions most commonly used to measure quality of environmental disclosure are those suggested by Wiseman (1982), namely, evidence and specificity, which were widely adopted by many pertinent studies (e.g. Al- Tuwajri, *et al.*, 2004; Cormier *et al.*, 2004; Cormier *et al.*, 2005; Cowan, 2007; Freedman and Wasley, 1990; Hughes *et al.*, 2001; Kuo and Chen, 2013; Lassaad and Khamoussi, 2012; Zeghal & Ahmed, 1990). Thus, consistent with disclosure quality measures used in prior research (e.g. Al- Tuwajri, *et al.*, 2004; Cormier *et al.*, 2004; Cormier *et al.*, 2005; Cowan, 2007; Freedman and Wasley, 1990; Hughes *et al.*, 2001; Kuo and Chen, 2013; Lassaad and Khamoussi, 2012; Wiseman, 1982; Zeghal & Ahmed, 1990), disclosure quality was measured in this study on the basis of the dimensions of *evidence* (monetary/quantitative or non-quantitative) and *specificity* (specific or in general terms).

As mentioned previously, the public concern of environmental issues has increased, and as a result environmental accounting practice has received attention from the scholars in the area of accounting research, and much of this research was dominated by studies focused on environmental disclosure (Eltaib, 2012). The majority of prior environmental disclosure studies have focused on the quantity of disclosure but scant attention has given to disclosure quality (Aburaya, 2012; Ahmad and Haraf, 2013; Cuesta and Valor, 2013).

However, literature relating to disclosure quantity will be reviewed. This because of that, the quantity or extent or volume of the disclosure is an indicator (but it does not fully reflect its quality) of its quality (Abadi and Janani, 2013; Deegan and Gordon, 1996; Deegan and Rankin, 1996; Freedman & Stagliano, 1992). Confirming this, Hooks and Van Staden (2011) found that, disclosure quality is significantly related to the reporting extent proxied by the number of sentences. Chakroun and Hussainey (2014) also suggest that disclosure quality may be related to disclosure quantity and hence disclosure quality and quantity share the same determinants. Based on this, the present study refers to the literature of quantity (extent) of disclosure and uses it as a base to develop hypotheses of some variables that the literature lacks, regarding disclosure quality specifically.

Disclosure quality measure enables to evaluate meaning and importance of disclosure, rather than just the volume (Walden and Schwartz, 1997). Quality of reporting has been contended to significantly influence the decision quality of stakeholders (Brink *et al.*, 1997). Hasseldine *et al.* (2005) suggested that environmental disclosure quality as opposed to just quantity has a significant impact

on the development of environmental reputation among stakeholder groups of investors and executives.

It was argued that quality reporting does not entail only volume but it should also allow stakeholders to carry out informed decisions that are significant to their intentions (Brink *et al.*, 1997). A primary issue in the context of reporters is the report content; in other words, what makes a really significant issue in the user's viewpoint (Barr, 2007). So, reporting quality should be considered because the failure to encapsulate the content of the environmental information constitutes a failure to cover the issue, its importance and the communicated meanings (Silva, 2008). The quality of the environmental disclosure can be seen as a key value for companies, and many benefits could be provided if the company released high quality environmental information (Rattanaphaphtham and Kunsrison, 2011). It is recognized that the quality of environmental reporting (as compared to its quantity) is important (Sulaiman *et al.*, 2014).

However, prior research revealed that companies disclose a limited amount and poor quality of social and environmental information. During the 2000s decade, many studies relating to social and environmental disclosure were conducted, and most of them have indicated a low level of quantity and/or quality of social and environmental disclosure (cf. Belal, 2000, 2001 and 2008; Elijido-Ten, 2004; Imam, 2000; Kamla2007; Rizk *et al.*, 2008; Said *et al.*, 2009; Silva, 2008).

Later on, a study of Abd Rahman *et al.* (2011) was conducted to assess the level of corporate social responsibility disclosure of a sample of Malaysian government-

linked listed firms. They found that the amount of CSR disclosure by Malaysian government link companies to be limited but growing. Liua, Liu, McConkey and Li (2011) investigated environmental disclosure in annual reports and stand-alone environmental and social responsibility reports of steel companies listed in Shanghai Stock Exchange. The study shows significant differences in the form of environmental disclosure, as well as great differences in terms of content and intensity. Djajadikerta and Trireksani (2012) measured the extent of CSED made by Indonesian listed companies on their corporate web sites. They found that the extent of CSED is low and the nature of disclosure is mostly descriptive.

Cuesta and Valor (2013) investigated the quality of environmental, social and governance reporting of Spanish listed companies. They indicated that the sampled companies failed to provide complete information on environmental performance (37%). Harun *et al.* (2013) examined the quality of sustainability disclosure by 15 commercial banks in Malaysia, and they concluded that the disclosure quality is considered low. Similarly, Darus *et al.* (2013) revealed that the quality of CSR information disclosed by Malaysian companies on their websites proved to be generally low.

Employing a case study method and using qualitative data, Momin and Parker (2013) investigated social and environmental disclosure in the annual reports of Multinational Companies (MNC) subsidiaries in Bangladesh. The study concluded that social and environmental disclosure of MNC subsidiaries in Bangladeshi is limited. Said *et al.* (2013) examined the level of environmental disclosure of Malaysian companies. The study revealed that the level of environmental disclosure

in Malaysian public listed companies is low. Ahmad and Haraf (2013) examined environmental disclosures of a sample of property development companies in Malaysia. They concluded that both quantity and quality of environmental disclosures are very low.

Yusoff and Othman (2013) investigated the state of environmental reporting by Malaysian and Australian companies on different mediums. The study revealed that environmental reporting in stand-alone reports (environmental reports, social and sustainability reports), corporate websites, and corporate newsletters is predominantly general and qualitative in nature. Bowrin (2013) examined the extent and factors of social and environmental disclosure made by publicly listed Caribbean companies. The study revealed that the level of social and environmental disclosure in the Caribbean was relatively low.

Chang (2013) examined the environmental disclosure of listed eclectic companies in China made in their social responsibility reports. The findings indicated that the extent of environmental disclosure is low. Kamla and Rammal (2013) examined social reporting with special emphasis on themes related to social justice on annual reports and web sites of Islamic banks from 11 countries. The results revealed that social disclosure of the Islamic banks emphasize their religious character through claims that they adhere to Sharia's teachings, but the disclosure lacks specific or detailed information relating to schemes or initiatives.

He and Loftus (2014) evaluated the environmental disclosure practices of listed Chinese operating in environmentally sensitive industries, and revealed that, the level

of disclosure is low and lag behind that of companies in developed countries. Chithambo and Tauringana (2014) examined the extent of greenhouse gas (GHG) disclosures made in the annual reports, sustainability reports and web sites of London Stock Exchange financial listed companies. The study indicated that the extent of voluntary GHG disclosure of the sample companies is still low.

Joseph *et al.* (2014) examined extent and determinants of the sustainability reporting in Malaysian local councils' websites. The study indicated that the level of sustainability disclosure on the corporate websites of Malaysian public sector was below average level (26.8%). Kansal *et al.* (2014) examined level of CSR disclosures made by the top 100 companies in the Bombay Stock Exchange, and found that overall disclosures are low.

Yusoff and Darus (2014) investigated the environmental disclosure practice from an Islamic perspective using content analysis on annual and sustainability reports of Islamic Financial Institutions (IFIs) in Malaysia. The study revealed that the extent of environmental disclosure is low, descriptive and qualitative in nature. The results also indicated that the key environmental disclosures provided were related to climate change mitigation and adaptation, and prevention of pollution type of activities. Further exploration on the prioritization of environmental activities found that the key focus of the vital activities was prevention related programmes.

Ahmad and Hossain (2015) conducted analysis of the disclosure of climate change and global warming made in the annual reports of 79 Malaysian companies. They concluded that this kind of disclosure in the annual reports of Malaysian companies

is still at its introductory stage. Lipunga (2015) examined the level of CSR disclosure in the annual reports for 2012 and 2013 of Malawian quoted companies. The study indicated that the level of CSR disclosure that the companies were making in their annual reports is generally low. Particularly, the companies were disclosing poorly on environment category. Similarly, Nurhayati, Taylor and Tower (2015) revealed that the extent of social and environmental disclosure in annual reports of Indian textile companies is low.

Vilar and Simao (2015) investigated how the banks use their web sites to disclose their social responsibility concerns and activities. The study revealed that the banks disclose on their websites on environmental performance, socioeconomic programs and other CSR information. The study also revealed that there are geographic patterns in the quantity and detail of the disclosures. The banks belong to Europe, the American continent, and Oceania, were disclosed more information. The study concluded that the level of disclosure is higher and more detailed according to the development level of the country where the banks operate in.

Adopting descriptive research, Innocent *et al.* (2015) examined stakeholder's (investors, consumers and chartered accountants) perspective on the effectiveness of triple bottom line disclosure practices of Nigerian firms. The findings indicated that investors, consumers and chartered accountants are dissatisfied with the extent of firms TBL disclosure practice in Nigeria, and the firms' reporting was often vague and far from the expression of actual performance. Kaur (2015) explored the item wise variation among different environmental disclosure categories made by Indian

companies. The study revealed insignificant differences among the environmental disclosure categories

More recently, Nurhayati *et al.* (2016) investigated the social and environmental reporting of Indian textile and apparel firms. The study reported a low extent of social and environmental reporting by the sample firms, with a mean disclosure of 14%, while firms reported relatively more extensive environmental information, with a mean disclosure of 18.4%. Hewaidy (2016) evaluated social and environmental disclosure practices in the annual reports of a sample of 43 companies listed in Kuwait Stock Exchange. The results revealed that the overall disclosure level for the sample companies is 21%, and the disclosure level varies by disclosure category.

In high environmentally sensitive industries, including oil and gas industries, the literature revealed also low level of quantity and quality of social and environmental disclosure. For example, Guenther *et al.* (2007) examined environmental reporting practices of global petroleum and mining companies. Using GRI indicators, the study analyzed 48 CSR reports for 2005. The study indicated that the petroleum and mining companies disclosed about 31% of the total GRI indicators. The study also indicated that only 8% of total environmental indicators were disclosed with high quantity and quality. Frynas (2009) indicated that many oil companies from developing countries provide little concrete data on social and environmental issues

Ane (2012) examined the environmental disclosure quality of listed firms in heavily pollution industries (including, electricity, steel, oil chemicals, mining, etc.) in China, and indicated that the overall environmental information disclosure quality is low.

Sen *et al.* (2011) indicated that the voluntary environmental disclosure by oil and petrochemicals, mining and minerals, steel and cement companies in India is incomplete, more qualitative and provide inadequate disclosure for most of the environmental themes.

Oba and Fodio (2012b) investigated the extent of environmental disclosures in oil and gas and construction industries in Nigeria. The results provided evidence on the poor environmental disclosure levels in the annual reports of sampled companies. The results also indicated that the oil and gas industry provided a better disclosure level but this difference was not significant. Al-Drugi and Abdo (2012) investigated the development of environmental disclosures by oil and gas companies operating in a developing country of Libya from 2002 to 2009. They revealed that although, environmental disclosure has witnessed improvement during the period, but the level of CED is still low. Eljayash *et al.* (2012) examined the quantity and quality of CED in annual reports by national oil and gas companies in Middle East and North Africa (MENA), particularly Arab oil exporters. They revealed that, overall; CED in Arab oil countries is still low compared with other oil companies in developed countries.

Eltaib (2012) examined the environmental accounting disclosures of Australian oil and gas companies. Annual reports and stand-alone sustainability reports of the 10 largest Australian oil and gas companies listed in Australian Stock Exchange over the period 2005-2010 were analyzed. The results showed that environmental disclosure trend fluctuated during the study period. The results also indicated that the most of the disclosed environmental information is favourable, non-financial, pure narrative and general information. Summerhays and De Villiers (2012) using a

sample of the largest six international oil companies examined the disclosure patterns and strategies in response to the Gulf of Mexico oil spill. The findings indicated that the overall environmental disclosures of the oil companies increased after the oil spill.

Eljayash *et al.* (2013) examined the differences in environmental disclosure practices between national oil and gas companies and international oil and gas companies operating in Arab petroleum exporting countries. The study concluded that despite the slight increase in the environmental disclosure practices in national companies; the difference is still significant compared with international companies. Recently, Mughal (2014) examined CSR disclosure practice of petroleum companies in Pakistan. The study highlighted that petroleum companies in Pakistan are contributing positively towards CSR, more conscious towards portraying their image and they have understood the importance of disclosing environmental information other than financial information.

More Recently, Comyns and Figge (2015) explored the evolution of greenhouse gas reporting quality of 45 oil and gas companies listed on the 2011 Global Fortune 500 index. The study also investigated whether the evolution of reporting quality is linked with the type of information. This study revealed that, in total, 80 per cent of 245 reports contained quantitative and qualitative data on GHG emissions while the remaining 20 per cent contained only qualitative data. The study also revealed that GHG reporting quality has not improved significantly between 1998 and 2010, and the type of information is important in terms of quality evolution. Eljayash (2015) investigated environmental disclosure in the oil companies in three countries of the Arab Spring (Egypt, Libya and Tunisia). The results of the study indicated low level

and quality of environmental information disclosed in the annual reports before Arab spring.

Nonetheless of these results, there are some previous studies that showed high levels of environmental disclosure. For example, Yusoff, Lehman, & Nasir (2006) examined environmental disclosure and motivations among Malaysian public-listed companies. The study indicated high level of disclosure regarding current environmental arrangements and future environmental strategies, and Aburaya (2012) indicated that the level of corporate environmental disclosure quality in the UK was 72.74%.

However, the majority of prior studies related to environmental disclosure have focused on the quantity of disclosure but scant attention has given to disclosure quality. From literature review, it is noted that, with the exception of a few studies (e.g. Aburaya, 2012; Ahmad and Haraf, 2013; Ane, 2012; Belal, 2000; Brammer & Pavelin, 2006, 2008; Comyns and Figge, 2015; Cormier *et al.*, 2005; Cuesta and Valor, 2013; Darus *et al.*, 2013; Dong *et al.*, 2015; Eakpisankit, 2012; Eljayash *et al.*, 2012; Haji, 2013; Hassan, 2010; Harun *et al.*, 2013; Hooks & Van Staden, 2011; Lu *et al.*, 2015; Michelon *et al.*, 2015; Oba and Fodio, 2012a; Rupley *et al.*, 2012; Sulaiman *et al.*, 2014; Wiseman, 1982), who focus on disclosure quality, previous social and environmental disclosure studies were not able to capture the quality of the disclosure. Many authors have stressed that the quality of environmental disclosure is quite essential and such issue should be considered (cf. Aburaya, 2012; Adams *et al.*, 1998; Clarkson *et al.*, 2008; Hall, 2002; Silva, 2008; Sulaiman *et al.*,

2014). This called for environmental disclosure studies dedicated to the investigation of aspects beyond the disclosure level, such as disclosure quality.

Another limitation of literature is that, many prior social and environmental disclosure studies used disclosure quantity to measure disclosure quality (Hussainey and Mouselli, 2010; Michelin *et al.*, 2015). This may be because these studies proposed that the disclosure significance can be reflected by the disclosure quantity. However, many researchers have cautioned that much information does not mean that it has high quality, therefore, quantity or volume of information reported is not appropriate measure for reporting quality. For example, Buzby (1975) argued that disclosure level is not the same as its sufficiency; hence, the former cannot measure the overall disclosure quality. Wiseman (1982) argued that the environmental disclosure length does not reflect its quality. Freedman and Stagliano (1992) argued that although the quantity of reporting sheds some light on the importance of information, it fails to reflect the full communicative content of the information, and as such, it is riddled with limitations in terms of a complete measurement of reporting quality. Deegan and Gordon (1996) argued that the assumption that the significance of a disclosure can be meaningfully represented by the quantity is incorrect. Similarly, KPMG (1999) suggested that disclosure quality is not synonymous with disclosure quantity.

Hussainey and Mouselli (2010) stated that disclosure quantity alone is not a satisfactory proxy to measure disclosure quality. Michelin *et al.* (2015) argued that the disclosure instruments used in previous social and environmental disclosure studies have been built primarily on a checklist of items that capture the amount and

variety of disclosure do not sufficiently determine the quality of information. In practice, despite efforts that spent by some related organizations resulted in some standardization of corporate social and environmental reporting, particularly in terms of format, but their approach to indicators is unlikely to produce high quality (Cuesta and Valor, 2013). To overcome this limitation, this study measures the quality of environmental disclosure using an environmental disclosure index and scoring scheme that able to sufficiently determine not just the quantity, but the quality of disclosure.

Moreover, most of studies related to environmental disclosure quality have concentrated on developed countries, while, there is a lack of studies addressing the quality of environmental disclosure in the developing countries. Thus, this study examines environmental disclosure quality in developing countries.

2.3.4 Media for Environmental Reporting

There are various mediums for disclosing environmental information including: annual reports, supplements to the annual reports or generated at interim dates, reports on the environment and society, sustainability reports⁵, activities advertisements and articles, environmental brochure or corporate brochure, booklets or leaflets on the environmental performance addressing the company's activities and products labeling to promote environmental and other concerns, newspaper or magazine, CD reports, television and radio, video tapes, and websites. Companies

⁵ Regarding environmental reports, social responsibility reports and sustainability reports, naming is not standardized, as these reports may carry different names, such as report to society; towards sustainability report; sustainable development report; health, safety, and environmental report; sustainable development report; environmental, health, safety and community report; corporate accountability report; corporate citizenship report (De Villiers and Staden, 2006).

may also disclose environmental information via seminars or symposium, as well as in meeting with residents (Aburaya, 2012; De Villiers and Van Staden, 2006; Halme and Huse, 1997; Mughal, 2014; Peiyuan, 2005; Tilt, 1994; Williams and Pei, 1999; Yuen and Yip, 2002; Zeghal and Ahmed, 1990).

However, although social and environmental disclosure may be done via different media, majority of studies have only focused on the annual reports of organizations (Buhr, 1994; Gray *et al.*, 2001; Zeghal and Ahmed, 1990). This is confirmed by reviewing pertinent prior literature (cf. Aburaya, 2012; Abd Rahman *et al.*, 2011; Adams *et al.*, 1998; Ahmed & Sulaiman, 2004; Bayoud *et al.*, 2012; Buhr, 1998; Campbell, 2000; Campbell, 2004; Donovan & Gibson, 2000; Eljayash *et al.*, 2012; Eljayash *et al.*, 2013; Frost, 1999; Gray *et al.*, 1995a; Hackston & Milne, 1996; Kamla, 2007; Lodhia, 2000; Neu *et al.*, 1998; Oba and Fodio, 2012a,b; O'Donovan, 2002; Pahuja, 2009; Said *et al.*, 2013; Sulaiman *et al.*, 2014; Tantish, 2003; Wiseman, 1982; Zain, 1999).

Focusing on this corporate reporting medium (i.e. annual report) could be due to its characteristics and attempt to obtain other types of documents is very difficult (Kamla, 2007). However, in these days, it is common practice for companies to publish their reports (including environmental/ social or sustainability reports) on their corporate websites; therefore, it became an easy task to obtain different corporate reports and information

However, many authors pointed out that annual report is not the only medium that could be used for environmental disclosure and offered this as a limitation of their

research. For example, Zeghal and Ahmed (1990) pointed out that firms use other mediums along with annual reports to disclose their social and environmental information. Some studies cover, in addition to annual reports, separate reports such as environmental reports (e.g. Buhr & Freedman, 2001). Other studies (such as Adams and Frost, 2004; Jones, Alabaster & Hetherington, 1999; Lodhia, 2006a) examined environmental disclosure on internet whereas some others covered other media for environmental disclosure; for example, Zeghal and Ahmed (1990) examined corporate brochures and advertisements along with annual reports. Cormier, Ledoux and Magnan (2009) combined between three disclosure vehicles, namely, paper-based environmental disclosure, web-based environmental disclosure and press releases environmental disclosure. A recent study of Wong and Wong (2015) has combined between three reporting media, particularly, annual reports, sustainability reports and websites of the top three Hong Kong's companies. The study aimed to examine the practices of corporate social responsibility but not disclosure.

In practice, while a company may prefer a certain vehicle for disclosing environmental information, it still does not limit its self to use one vehicle of disclosure, rather, companies use different media to disclose their environmental information. However, there are increasing numbers of companies who are disclosing their environmental information through separate environmental, social and sustainability reports (Jose and Lee, 2007). In spite of a growing trend toward publishing stand-alone reports, prior literature did not pay much attention to these reports. It is important to give more attention to these reports (Hassan, 2010).

Moreover, users of company's environmental information may not be satisfied by reviewing one type of report containing environmental information (annual report, environmental or social or sustainability report). A company may present a particular type of environmental information on a certain medium, while at the same time it presents another type of environmental information in another medium. In other words, adequate information may not be available in one report, but different reports may, cumulatively, contain quite adequate information.

It was argued that specific concentration on annual reports may lead to an incomplete picture of practices of disclosure (Kamla, 2007; Roberts, 1992). Zeghal and Ahmed (1990) claimed that, confining the study to annual reports may provide only a portion of the overall picture of reporting. As Razeed *et al.* (2004) noted that prior studies (such as Patten, 1992) dedicated to their work on disclosures in hard copies of environmental report and annual report. Nevertheless several studies (e.g. Isenmann and Lenz, 2001; Wheeler and Elkington, 2001) emphasis on the notion that different media is disseminated to different stakeholders. Razeed *et al.* (2004) demonstrated that various communication channels are required and not just one report.

Moreover, according to Tilt (2001a), no evidence showing that the annual report is the most suitable medium for environmental disclosure. Alias (2001) argued that it is the limitation of study that restricts annual reports to investigate environmental disclosure, because companies may disclose their environmental information through other media. Buhr and Freedman (2001) contended that, in instances where companies generate environmental reports, it is more likely that little information

will be found in their annual reports. Islam *et al.* (2005) suggested that, separate environmental reports published by the company (if any) could be investigated.

In short, while, focusing on a certain media of reporting for the examination of environmental reporting practices may lead to unclear, imprecise and incomplete picture of the actual state of environmental disclosure practices (Alias, 2001; Buhr, 1994; Buhr & Freedman, 2001; Roberts, 1992; Silva, 2008; Unerman, 2000; Zeghal & Ahmed, 1990), practically, capturing all communications in different reporting mediums of a company may be problematic (Zeghal & Ahmed, 1990). Supporting this, Silva (2008) argued that a more extensive emphasis of environmental disclosure is called for, but it is difficult for a researcher to identify all sources of company communication. Therefore, this study encapsulates the main media for environmental disclosure. The main vehicles of disclosing corporate responsibility information (including environmental information) in public domain are annual reports, corporate environmental/ responsibility or sustainability reports, and company websites (KPMG, 2008). For a detailed account, these environmental reporting media are highlighted in the following paragraphs.

2.3.4.1 Annual Reports

Annual reports are the main media companies use to communicate their information to various external users and considered as the most important source of information about a company (Das *et al.*, 2015; Haji, 2013). In the context of environmental disclosure, corporate annual reports are recognized as the main resource for environmental data.

This is mainly due to (Crowther, 2002; Haji, 2013; Hughes, Anderson and Golden, 2001; Kamla, 2007; Tilt, 1994; Wiseman, 1982):

- Their statutory compliance, regular production and wide availability.
- The proliferating trend of environmental disclosure in annual reports and in their certain sections. This is why companies are motivated to make other stakeholder groups aware of the importance of environmental disclosure.
- Because annual reports hold the most accessible information source for listed companies, both in hard copies and in e-form.
- The fact that users rely on corporate annual reports to obtain both financial and non-financial information because of the high degree of credibility and the high level of confidence on the annual reports as they are being audited continuously.

Gray and Bebbington (2001) stated that, it is essential that environmental issues are given substantial attention in the annual report. In addition, Razeed *et al.* (2004) indicated that the majority of US resource companies primarily disclose their environmental information through annual reports (hard copy and internet-based annual reports) but fail to exploit the power of other media for environmental disclosure. However, despite the fact that it becomes apparent that companies are providing environmental disclosures in regulatory disclosure documents outside the annual reports (Buhr, 1994), annual reports are still keeping their domination on all.

2.3.4.2 Stand-alone Reports

As mentioned earlier, companies previously used to employ annual reports to disclose environmental information. Companies have changed how they report their

environmental information, as in the mid-1990s stand-alone environmental reports⁶ have emerged and occupied significant place in the realm of environmental reporting (Campbell, 2003). Thereafter, a number of companies publishing separate environmental and sustainability reports dramatically increased (Jose and Lee, 2007). A series of triennial surveys conducted by KPMG that was initiated in 1993 show increasing number of companies publishing separate environmental, social and sustainability reports. The 1993, 1996, 1999, 2002, 2005 and 2008 KPMG's surveys show that, only minority of companies (15%) published separate environmental-related reports in 1993, and this percentage has increased to 17% in the 1996 survey. This increasing trend continued, as the 1999 survey indicated that 35% of covered companies had published separate environmental-related reports and this number had risen to 45% in the 2002 sustainability survey, 52% in the 2005 survey, and 79% in the 2008 survey (KPMG, 1993, 1996, 1999, 2002, 2005, and 2008). Tilt (2001b) suggests that other than annual report, most likely medium may be used for environmental disclosure is stand-alone environmental report.

Currently, publishing stand-alone environmental-related reports is a common practice across industry and across country. Industrially, in oil and gas context, most major companies presently draw up corporate responsibility or sustainability reports that highlight the manner in which they are addressing the stakeholders' environmental and social concerns. Geographically, in many parts of the world the tendency of the companies to produce separate social and environmental reports is increasing. A myriad of names is used to qualify reporting in this area; Corporate

⁶Stand-alone reports are separate reports -from the annual report- dealing with environmental and social issues, and are often referred to as environmental reports, corporate social responsibility reports, social and environmental reports, sustainability reports, triple bottom line reports, or health, safety and environment reports (Hooks and van Staden, 2011; Silva, 2008).

Reporting (CR), Corporate Social Responsibility Reporting (CSRR), sustainability reporting, triple bottom line reporting, environmental reporting (ER) among others (Ramdhony, Padachi & Giroffle, 2010).

However, these reports involve disclosing environmental, social, and economic related information and frequently labeled a corporate environmental report or a corporate social report or a sustainability report. So, this study uses the terminologies of, environmental reports, social reports, and sustainability reports, to refer to the reports carrying these names explicitly or implicitly (have features of these reports). Thus, a report containing information on environmental issues is classified as environmental report, a report containing information on environmental and social aspects is classified as social responsibility report, whereas a report incorporating information on environmental, social and economic aspects is classified as sustainability report. Therefore, for the purposes of this study, sustainability reports of the sample companies, whenever available, are analyzed to extract environmental-related information.

2.3.4.3 Internet Homepages

As the World Wide Web (WWW) grows and the numbers of users of this medium are rapidly increasing as organizations are using the internet to advertise and also to report. Consequently, there has been an explosion of reporting, including environmental reporting, through the internet (Gray and Bebbington, 2001). In recent years, advances in technology and the ongoing increase in Internet access has resulted in the corresponding increase in web use as a reporting medium (Islam *et al.*, 2005). Moreover, concern over ethical social and environmental performance has

increased with the relevant information being widely publicized on the internet (Adams, 2002). Websites are alternative media to disseminate environmental, social and sustainability information (De Villiers and Van Staden, 2011a, b, 2012; Joseph *et al.*, 2014; Lodhia, Jacobs and Park, 2012). Thus, the popularity of the internet has encouraged companies to use this medium for environmental disclosure (Jones, Alabaster and Walton, 1998), and it became a common to see sections on corporate websites dealing with environmental and social issues (Hooks and van Staden, 2011).

The most obvious advantages of internet-based environmental reporting are (Elvins ,2003; Gray and Bebbington, 2001; Jenkins and Yakovleva, 2006; Scott and Jackson , 2002; Vilar and Simao, 2015; Yusoff and Othman, 2013): 1) internet is universal access communication channel, 2) internet is better able to communicate with a larger and more divers stakeholders, as by using internet reporting, companies reach a more diverse audience, 3) internet-based environmental reports can be updated easily by the reporting organization, 4) timelines and updating of data, as data can be obtained when required, 5) reduced resource use and costs (for preparer), and 6) users can engage in feedback and firms can effectively keep abreast of respondents' information which helps to develop broader corporate-stakeholders relationships.

However, this medium is not free from limitations, as reporting environmental information through internet has some disadvantages, which are (De Villiers and Van Staden, 2011b; Elvins ,2003; Gray and Bebbington, 2001; Jenkins and Yakovleva, 2006; Scott and Jackson , 2002): 1) comparisons between different years of data are difficult as there is no permanent record of the data; 2) many millions of people do not have easy access to the internet, and so if all reporting was through internet it

would be a worrying anti-democratic development, 3) web-based environmental information are often not dated so it can be difficult to assess to what period the data relates, 4) difficulties are associated with the verification of web pages and data's up-to-date condition, and 5) it is costly for the user, as resource and costs are transferred from the preparers to the users.

Thus, one of the most important advantages of internet as a reporting tool is the timely availability of information whereas timeliness is one of the qualitative characteristics of accounting information. According to FASB (1980), timeliness refers to the information availability for decision makers prior to its losing its capacity to impact decisions as users need timely information to enable them to make a timely review and updated information so that they can make a proper decision. Timeliness is important because decision makers need information before they make their decisions, not after. It is recognized that "if information is not available when it is needed or becomes available only so long after the reported events that it has no value for future action, it lacks relevance and is of little or no use" (SFAC No. 2, para.47). According to FASB "Accounting information is timely when it is available to decision makers before it loses its ability to influence decisions and predictions. The older the information is, the lesser its usefulness and relevance for effective decision making" (FASB, SFAC No.2).

Today, in the environment of characterized by both globalization and liberalization, timely information is called for to help users reach effective decisions. The most appropriate tool ensures that information is timely available for external users is internet technology (Al-Arussi, Selamat and Hanefah, 2009). Thus, the internet has

become invaluable for company disclosure of information, so examining the corporate web pages for social responsibility information has become as crucial as exploring annual reports (Branco and Rodrigues, 2008).

A major portion of environmental reporting literature has mainly concentrated on the classical print medium for disclosure (Lodhia, 2005), whilst, the internet has become an increasingly important medium of information disclosure (Kotler & Lee, 2005), and its use and importance are increasing for different groups of stakeholders (Adams and Frost, 2004; Campbell and Beck, 2004). So inclusion of internet as a medium of disclosure in a study concerning environmental disclosure makes the study inevitable. Therefore, in addition to annual reports and stand-alone reports, this study covers environmental-related sections on corporate homepages.

2.3.5 Differences of Environmental Disclosure Quality via Different Reporting Media

Where organizations report? considered an interesting question. In this regard, there is little debate regarding the suitable place for financial information while on the other hand, reporting of social and environmental issues is more debatable (Tilt, 2001a). The relative importance of the various environmental reporting mediums has been debated in literature.

Within prior literature, locations of environmental and social disclosure have not been given attention that it deserves. Although some studies considered the location of disclosure, they discussed and analyzed this dimension within one medium of disclosure, namely, annual report (cf. Manasseh, 2004; Jaffar, 2006). It is believed that ignoring such dimension altogether will cause losing part of the richness of any

CSD practices (Manasseh, 2004). So, the present study considers the location of disclosure across disclosure media.

Quality of reporting has been contended to significantly influence the decision quality of stakeholders (Brink *et al.*, 1997) and effective reporting should hence facilitate stakeholders' informed decisions that are consistent with their interests (Barr, 2007). So, it can be argued that better source of information depends on the media's higher level of quality. Having this in mind, companies use different kinds of media to disclose their environmental information, and based on findings of some previous studies (for example, Buhr, 1994; Zeghal and Ahmed, 1990) different environmental reporting vehicles send different messages. Thus, users of company's environmental information should not rely on a single source of information, but different vehicles of reporting should be reviewed. On the other hand, a review of all media used by a company for its environmental information is difficult and time consuming for readers. So, for information users it is important to know which medium/s is/are better to be relied on to help in decision making of information users.

It was argued that location information is imperative in reflecting the relative significance of disclosure, where the disclosure location shows the importance that the company placed on its disclosure selection (Manasseh, 2004; Unerman, 1996). In the financial statement, the format in terms of voluntary and mandatory aspects also varies. Hence, the financial report areas that are not covered within the statutory format and the location disclosure selection are left to the discretion of the company.

According to Mitchell, Percy and McKinlay (2006), while audited information is viewed more credibly, non-audited sections are likely to contain more environmental information. In the absence of mandatory requirements, and because disclosure in audited sections requires additional cost of ensuring compliance with the laws and regulations, companies would rather that their environmental disclosure be non-audited and they are willing to provide more environmental disclosures in those sections (Mitchell, *et al.*, 2006). Similarly, across disclosure vehicles, among several environmental disclosure mediums, only annual report is required to be audited, and thus it is expected that companies would rather their environmental disclosure be non-audited and they are considered to be willing to provide more environmental disclosures in non-audited reports, including environmental report, social report, sustainability report and corporate website. It has been accepted that other disclosure methods may be utilized by companies and that the least amount of the corporate social reporting of the company may be included in the published annual reports (Unerman 2000).

Some previous studies examined perceptions of a company's stakeholders on location or reporting mediums of social and environmental information. Annual reports have been regarded as the most important source information for shareholders (Adams *et al.*, 1998; Deegan *et al.*, 2002). Some previous surveys, for example, Deegan and Rankin (1997) and Epstein and Freedman (1994) have confirmed that shareholders want social and environmental information in the annual report. Other previous studies (Craven and Marston, 1999; Alvarez, Sanchez and Dominguez, 2008) proposed that more accessible media such as corporate web site improves transparency and reduces information asymmetries. De Villiers and Van Staden

(2012) investigated shareholders attitudes towards corporate environmental disclosure in New Zealand. Particularly, they tried to give answer for the question on where the environmental information should be disclosed (either on annual report, separate environmental report or company web site). They concluded that most of surveyed shareholders favour disclosure of environmental information in the annual reports, and the corporate web site was the next most favoured avenue for the disclosure of environmental information.

However, prior research showed variety between companies in using different disclosure media to communicate their environmental and social information. For example, KPMG (1999) survey showed that almost three fourth of the number of companies provide their environmental information in their annual report and one fourth of the companies provide them in separate environmental reports. Whereas Razeed *et al.* (2004) indicated that majority of US resource companies primarily used annual reports (both hard copy and internet-based) to disclose their environmental information, but failed to exploit the power of other media.

Results of a survey conducted by Peiyuan (2005) revealed that environmental reporting of Chinese firms are characterized as ill-regulated when it comes to the content and format of their environmental reports – some companies provide the information in their annual reports, others on their websites and some others by other means such as environmental reports and newspapers and magazines. Particularly, Peiyuan (2005) indicated that of 54 companies, 8 (14.8%) companies disclosed environmental information in environmental reports, 16 (29.6%) companies in environmental brochure, 36 (66.7%) companies disclosed in corporate brochure, 15

(27.8%) in financial statement, 25 (46.3%) on website, 19 (35.2%) in receive tours to factory, 5 (9.3%) in meeting with residents, 11 (20.4%) on television or radio, 14 (25.9%) in newspaper or magazine, 10 (18.5%) at seminars or symposium, and 3 (5.6%) through other media. Thus, the study revealed no uniform format of environmental reporting among Chinese companies.

Chatterjee and Mir (2006) indicated that Indian firms offer greater environmental information on their websites than on their annual reports. Jenkins and Yakovlenva (2006) examined social disclosure among the leading 10 global mining firms and the study showed that in 2003 alone, out of the ten firms that produced annual reports, seven produced a stand-alone social and environmental report, and one produced a specific volume of social and environmental report and made it a part of the annual report. Moreover, all ten companies published information on their social and environmental issues on their websites in 2004.

With the aim of identifying the status and progress of environmental reporting, Mak, Chan, Wong and Zheng (2007) examined the environmental reports of a sample of airlines in Europe and the Asia Pacific region. The study revealed that only airlines in 12 countries have published stand-alone environmental reports. The study showed that European and Asian airlines have devoted varying degrees of effort and resources to producing stand-alone environmental reports, and the reports produced by European airlines were richer in content than those of their counterparts in Asia.

A few previous studies relating to social and environmental disclosure have combined more than one reporting medium, and very few studies have compared the

social and environmental disclosures made in various reporting mediums. For example, Zeghal and Ahmed (1990) compared between three mediums used by corporations to disclose social information, namely, annual report, brochures and advertisements (radio, television, and newspapers) in regards to their type and format of information disclosure. The study indicated that in terms of the number of words, brochures play the most important role in the social information disclosure. They are followed by the annual reports, whereas advertisements play a very minor role in the total social information disclosure. Zeghal and Ahmed (1990) suggested that social information provided by a firm in its annual reports may not be complete, and as such, other disclosure mediums, such as, brochures are often used by firms to supplement the annual reports.

Tilt (1994) investigated pressure groups' perceptions (sufficiency, ease of understanding and credibility) of CSD in various media (annual report, supplements to the annual report or generated at interim dates, booklets or leaflets addressing the company's social activities, advertisements and product labels). The study indicated that there is strong agreement that the amount of corporate social responsibility disclosure is insufficient. The study also indicated that, the most commonly used medium for social responsibility disclosure are the annual reports. While, the most commonly received form of social disclosure are advertisements followed by annual reports. In terms of understandability, the study revealed that advertisements are considered as the easiest form of the social disclosure to understand, followed by supplements, while annual reports scored a median rank for understanding. In terms of credibility, the study revealed that annual reports scored a median, while advertisements and supplements were seen to be low in credibility.

Williams and Pei (1999) investigated corporate social disclosures in annual reports and corporate websites of companies from four countries (namely, Australia, Singapore, Malaysia, and Hong Kong). The results revealed that Australian and Singaporean companies disclosed more CSR information on their websites than in annual reports, while, for companies belong to Malaysia and Hong Kong there were no significant differences between the two mediums. However, the study showed that companies in all countries appeared to provide more narrative information on their websites than annual reports.

Buhr and Freedman (2001) examined three media for environmental disclosure namely, annual reports, security exchange filings (the 10 K in the US and the Annual Information Form in Canada) and environmental reports. The study found that various firms that generate environmental reports are shifting much of their voluntary environmental performance information from their annual reports to their environmental reports to prevent information duplication. The study also concluded that the disclosure of Canadian firms increased more dramatically than the disclosure of US firm's disclosure, which was initially greater, and concluded that Canadian culture and institutional infrastructure is more conducive to the production of environmental disclosure than US counterparts. Canadian firms produced a greater level of voluntary environmental disclosure, especially in the environmental report, while the US firms produced more of the mandated disclosure in the 10 K and annual report.

Bronco and Rodrigues (2008) compared the level of CSR disclosure in the annual reports and websites of Portuguese companies. They found that companies in

Portugal disclosed more CSR information in their annual reports than on websites, and they suggested that companies prefer the annual report as a corporate social responsibility disclosure medium. Yusoff and Lehman (2008) showed that companies disclosed more environmental information in stand-alone reports and corporate websites compared to disclosure made in annual report. Sawani *et al.* (2010) examined the sustainability reporting and assurance practices in Malaysia. The study indicated that most of the information relating to sustainability disclosure reported is integrated in the annual report and with no assurance statement.

In Bangladesh, Islam and Islam (2011) examined the environmental disclosure in annual reports, press releases and stand-alone social responsibility reports of Niko company (a multinational oil and gas company operating in Bangladesh) over the period 2004-2007. They have found that the company annual reports and press releases adequately disclosed its environmental contingent liability, but they did not provide any information about the issue of the local community who were affected by the blowouts, instead the company utilized a stand-alone report to address this issue. De Villiers and Van Staden (2011b) compared environmental disclosures on websites and in annual reports of 120 companies in North American. The study revealed that there the levels of environmental disclosures in annual reports and on corporate websites are different.

Similarly, Sobhani *et al.* (2012) investigated the sustainability disclosure of Bangladeshi banks in their annual reports and corporate websites. They revealed that disclosure is taking place more in annual reports than on web sites. Yusoff and Othman (2013) indicated that most of items disclosed in stand-alone reports

(environmental reports, social and sustainability reports), corporate websites, and corporate newsletters showed higher mean average when compared to disclosures made in annual report. Thus, the study concluded that other reports are more favourable than annual reports in disclosing environmental information.

On the contrary, some previous studies found no differences between different mediums. For example, Cormier and Magnan (2004) found no significant variation between different disclosure media of sample companies listed on the Toronto Stock Exchange, as they found an extensive overlap of print disclosure and website disclosure. Suttipun and Stanton (2012) investigated the environmental reporting practices of Thai listed companies in their annual reports and websites. The study could not find different amount of environmental disclosures made in annual reports and on websites.

However, Buhr (1994) indicated mixed results, as the study showed that there is a difference between annual reports and environmental reports with regard to quantity, subject matters, type of information, and tense used. While the study found no difference in the quantity of environmental disclosure provided through annual reports and SOC filling mandated by Securities regulations, there were few differences found between the natures of the environmental disclosure provided through the two media. The results on possible differences in information type included in the two media were not conclusive. In addition, the study revealed that there are no differences between SOC filling and annual reports with regard to the use of subject matter. Thus, the study found differences between some media, but

found no difference between other media. Buhr (1994) suggested that more research is needed to compare between different reporting media.

As mentioned before, the majority of previous studies relating to social and environmental disclosure have covered a single media of reporting (mostly annual reports), while, there is a lack of interest in studying quality of disclosure in other mediums such as stand-alone reports and corporate websites (Hassan, 2010; Suttipun and Stanton, 2012). A few studies have combined more than one reporting medium. For example, KPMG (1993,1996 and1999), Cormier and Magnan (2003), Cormier *et al.* (2005), Clarkson *et al.* (2008), Hassan (2010), Sawani *et al.* (2010), Eltaib (2012), Setyorini and Ishak (2012), Darus *et al.* (2014), Rupley *et al.* (2012), Choi *et al.* (2013), He and Loftus (2014), Lu and Abeysekera (2014), Yusoff and Darus (2014) and Michelon *et al.* (2015), considered disclosure in both annual report and stand-alone report.

Other studies, for example, Williams and Pei (1999), Branco and Rodrigues (2008), Said *et al.* (2009), Suttipun and Stanton (2012), Sobbani *et al.* (2012), Bowrin (2013) and Kamla and Rammal (2013), considered annual report and corporate websites, and Adams, *et al.* (1998) considered annual reports and press release. Whereas other previous studies considered three reporting mediums, such as, annual reports, brochures and mass mediums advertisements (cf. Zeghal and Ahmed, 1990), annual reports, stand-alone reports and security exchange filings (cf. Buhr, 1994; Buhr and Freedman, 2001), annual reports, stand-alone reports and press releases (cf. Islam and Islam, 2011; Patten, 1992), stand-alone reports, websites and corporate newsletters (cf. Yusoff and Othman, 2013), annual reports, stand-alone reports and websites (cf. Chithambo and Tauringana, 2014; Cuesta and Valor, 2013; Kaur, 2015;

Pled and Iatridis, 2012). However, some previous studies considered more reporting mediums; for example, Tilt (1994) investigated CSD disclosures in annual report, supplements, booklets, advertisements and product labels.

Most of studies that covered mediums other than annual reports did not analyze the other mediums separately; instead they were analyzed as additional sources (Sapkauskiene and Leitoniene, 2014). Very few previous studies have compared the environmental disclosures made in various reporting mediums. In this regard, the previous studies concerned with different subjects, such as medium used by companies (e.g. Jenkins and Yakovlenva, 2006; KPMG, 1999; Mak *et al.*, 2007; Peiyuan, 2005; Razeed, *et al.*, 2004), how much is disclosed or extent/ quantity of disclosure (e.g. Branco and Rodrigues, 2008; Buhr and Freedman, 2001; Chatterjee and Mir, 2006; Cormier and Magnan, 2004; De Villiers and Van Staden, 2011b; Islam and Islam, 2011; Sobbani *et al.*, 2012; Suttipun and Stanton, 2012; Williams and Pei (1999; Yusoff and Lehman, 2008; Yusoff and Othman, 2013), what is disclosed (type) and format of information disclosure (e.g. Zeghal and Ahmed, 1990), or based on several dimensions, such as quantity, subject matters, type of information, and tense used (e.g. Buhr, 1994). However, these studies revealed mixed results. Some studies indicated differences between different mediums, while, some other studies found no differences (see above). Moreover, no study has compared between different media based on their quality.

In sum, while a few previous studies compared between different disclosure media, they did not consider the quality of disclosure, and instead considered extent, nature and other aspects. However, these studies have revealed contradictory findings.

Given the fact that, the companies use different media to disclose their environmental information and as users cannot identify and read all media, it is useful for them to determine the medium that contains environmental information with high level of quality. It was argued that examining other social and environmental reporting mediums such as stand-alone reports and corporate websites and comparing these alternative mediums to annual reports may reveal noteworthy insights on different practices of corporate communication on social and environmental information (Nurhayati *et al.*, 2015). All of these provide motivation for further investigation. Thus, the researcher was motivated to confirm whether there are any differences in quality of environmental disclosure among various reporting mediums of the oil and gas companies in developing countries. So, in addition to examining overall quality of three disclosure mediums (annual reports, stand-alone reports and corporate homepages), quality of these mediums will be comparatively examined in this study. This will help various stakeholders of companies to choose a certain medium of disclosure that they can rely on to extract environmental information with high degree of quality to enable them to make decisions. This study is the first study that made this comparison in order to fill gap in the literature.

2.3.6 Factors Influencing Quality of Environmental Disclosure

Concern about the quality of voluntary environmental disclosure (VED) makes it significant to dig deep into the factors that impact environmental information voluntary disclosure (Ling, 2007; Sulaiman *et al.*, 2014). Adams (2002) argued that an understanding of the factors that influence disclosure is important to improve accountability. As understanding determinants of disclosure assists in; improving

extensiveness of reporting, improving quantity and quality of reporting by companies, improving comprehensiveness of reporting.

Environmental disclosure worldwide is generally unregulated and voluntary in nature, (De Villiers and Van Staden, 2012; Michelon, Pilonato and Ricceri, 2015; Sen, Mukherjee and Pattanayak, 2011). It was argued that since environmental disclosure content is not strictly regulated and there is no standard of corporate environmental reporting, the content and the quality of environmental disclosure varies widely across firms (Aerts, Cormier and Magnan, 2004, as cited in Hassan, 2010; Cormier *et al.*, 2005; De Villiers and Van Staden, 2012; Peiyuan, 2005; Said *et al.*, 2013).

It is recognized that the quality of environmental reporting (as compared to its quantity) is important (Sulaiman *et al.*, 2014). The concern about the quality of voluntary environmental disclosure makes it significant to dig deep into the factors that impact environmental information voluntary disclosure (Ling, 2007; Sulaiman *et al.*, 2014). Adams (2002) argued that an understanding of the factors that influence disclosure is important to improve accountability. As understanding determinants of disclosure assists in; improving extensiveness of reporting, improving quantity and quality of reporting by companies, improving comprehensiveness of reporting. This leads to the question regarding the factors affecting quality of environmental disclosure. So, this study aims to identify the factors that determine the quality of environmental disclosure via different reporting mediums by petroleum companies in developing countries.

A review of the literature revealed a significant number of studies that have investigated the factors influencing the social and environmental disclosure. Several studies in the context of different countries have tried to determine environmental disclosure determinants in light of its nature, extent and quality. These studies proposed various factors that have the potential to influence the extent or quality of environmental disclosure. However, there have been various reasons for companies to make voluntary environmental disclosures. Based on political economy, legitimacy, and stakeholder theories, many reasons/ motivations behind voluntary environmental disclosure have been identified by previous studies. They include legitimacy pressures (Deegan, 2002; Patten, 1992); managing stakeholders' needs (Neu *et al.*, 1998); and fulfilling community expectations (Deegan, 2002).

From legitimacy perspectives, organizations are deemed to disclose some CSR information type to meet its social responsibility. The companies need to legitimize their activities and to display their CSR information to the public is inevitable (Deegan and Rankin, 1996; Manasseh, 2004). As such, environmental disclosures are considered as public relations activities that are created to improve the organization's esteem (Sumit, 2004). In this background, Wilmshurst and Frost (2000) showed that the major factors for corporate decisions to disclose environmental information include the right of the shareholders to information, the legal obligations criteria, and the concern of the community.

Furthermore, owing to the fact that corporate financial performance is linked to corporate environment performance, stakeholders are increasingly focusing on the firm's environmental issues (Peiyuan, 2005). Both investor and analyst groups are in

need of environmental information for their evaluation of the complete performance of the company and their estimation of environmental risk, governments and their agencies need it for their implementation of environmentally-related regulations and lastly, consumers need it to protect their rights. Additionally, even financial markets need environmental information. Responding to such requirements, in addition to the desire of companies to provide themselves with positive environmental images, companies disclose information about their environmental performance.

According to Deegan (2002), many of the factors influencing environmental reporting decisions overlap and interrelate. Moreover, Silva (2008) argued that various factors may motivate companies at the same time and it is not realistic to consider that a single factor dominates others. Cormier *et al.* (2005) also claimed that environmental disclosure is multidimensional and influenced by complementary factors. Literature relating to social and environmental disclosure contains several studies that investigated factors affecting the quantity and quality of social and environmental disclosures. The most pertinent studies that conducted in developed and developing countries are reviewed below.

Patten (1991) examined whether the social disclosure made by 128 US firms in their annual reports is related to public pressure (measured by size and industry classification) and firm profitability (measured by return on assets and return on equity). The findings showed that size and industry classification are significantly related to the social disclosure whereas profitability variables are not. In the US also, using a sample of 130 corporations, Roberts (1992) examined effects of stakeholder power, strategic posture toward social responsibility and economic performance on

corporate social responsibility disclosure, while controlling for some corporate characteristics (company age, industry classification and firm size). Findings revealed that there are associations between; measures of stakeholder power, strategic posture and economic performance and level of social disclosure.

In Australia, Deegan & Gordon (1996) investigated the relationship between the level of corporate environmental disclosure and environmental group membership, environmental sensitivity and firm size. Results showed that the extent of environmental disclosure is low, but increases over time. The results also revealed that firm size, environmental sensitivity of the industry, and environmental group membership are positively related to environmental disclosure. Also, Deegan and Rankin (1996) investigated the environmental reporting practices of a sample of 20 EPA-prosecuted Australian companies for 1990 to 1993. The study found that environmental reporting is negatively correlated with actual environmental performance, and prosecution produces greater positive environmental disclosures.

Hackston and Milne (1996) examined annual reports of 47 listed New Zealand companies to investigate the effect of some characteristics of companies (size, profitability, and industry type). The study revealed that size and type of industry have relationships with the CSR disclosure while profitability has not. Halme and Huse (1997) investigated the relationship between the extent of corporate environmental reporting and ownership concentration, board size, industry and country. Annual reports of 140 companies from four European countries (Finland, Norway, Sweden and, Spain) using content analysis were examined. Results revealed a significant correlation between environmental reporting and industry affiliation as

polluting industries companies disclose more information on the environment issues. However, the study found no relationship between environmental reporting and ownership concentration or the number of board members.

Adams, *et al.* (1998) examined the social disclosure of 150 companies belonging to six European countries (namely, France, Germany, The Netherlands, Sweden, Switzerland, and the U.K.). The study indicated that the amount and nature of information disclosed varies significantly across countries. Company size is significantly and positively associated with the amount of all types of social disclosures, while industrial grouping is related to environmental and some employee disclosures only.

Cormier and Magnan (1999) investigated environmental disclosure of 212 Canadian public firms from three industries, including oil refining, petrochemical and steel industry, for the period of 1986-1993. The study indicated that companies with good financial performance disclose more information than those with poor financial performance. Zain (1999) examined the social disclosure of Malaysian companies to determine motivations behind the disclosing social information. The study adopted content analysis of 100 annual reports and personal interview. The results indicated that human resource information was the main social theme disclosed. Regarding the motivations for disclosing social information the study revealed that the size of firm was the major factor of disclosure, and most companies were disclosing CSR information due to CSR awareness among the top management.

De Villiers and Barnard (2000) examined environmental disclosure in the annual reports of listed South African mining companies and financial mail's top 100 industrial companies for the years 1994-1999. The study revealed that mining companies offer more environmental information disclosure in their annual reports compared to their counterparts. The study also highlighted that larger companies are more inclined to report environmental information in comparison to smaller ones. Gray *et al.* (2001) analyzed annual reports of 100 UK firms for 1988 to 1995. The study investigated the amount of social disclosure and its relationship with a number of corporate characteristics including, turnover, capital employed, number of employees, and profit. The influence of industry affiliation on the relationship between social and environmental disclosures and company size and profit is also examined. The study revealed that there is relationship between corporate social and environmental disclosure and firm size and profit. However the study showed that these relationships change from industry to industry highlighting the significant influence of industry affiliation.

Tilt (2001b) examined disclosure relating to corporate environmental policies in annual reports and investigated the relationship between CEPs and the disclosure. The study revealed that there is no link between CEP and environmental disclosure. Adams (2002) explored the factors that affect the corporate social and ethical reporting of British and German companies. The study revealed that reporting practice depends on corporate size, country of origin and corporate culture. The study also revealed that the main motivation of reporting is enhancing corporate image and credibility in the eyes of stakeholders.

Patten (2002a) examined the relation between environmental disclosure in annual reports of US companies and their environmental performance. The study found a significant negative relation between level of environmental disclosure and environmental performance. In addition the study indicated that the level of environmental disclosure of companies from non-environmentally sensitive industries is more affected by environmental performance than the disclosure of companies from environmentally sensitive industries. Newson & Deegan (2002) examined the social disclosure policies of large Australian, Singaporean, and South Korean multinational corporations, and investigated whether there is an association between global expectations and social disclosure policies of large multinational corporations. The study indicated a weak association between global expectations and social disclosure policies of large multinational companies

Cormier and Magnan (2003) examined environmental reporting of 246 French firms from 1992 to 1997. The study found that the average environmental disclosure increased from 1992 to 1997. The study also revealed that firm size, proprietary costs, information costs, media visibility and industry are determinants of environmental disclosure. Tantish (2003) examined the impact of a number of company characteristics (firm size, ownership structure, industry type, raising capital and size of audit firm) on the amount of social and environmental disclosure in annual reports of Malaysian companies listed on the main board Kuala Lumpur Stock Exchange. The study revealed that firm size and ownership are weakly related with the amount of social and environmental disclosure, whereas other variables are not.

Al-Tuwaijri, *et al.* (2004) examined the interrelations among environmental disclosure, environmental performance, and economic performance. The results suggested that good environmental performance is significantly associated with good economic performance, and also with more extensive quantifiable environmental disclosures of specific pollution measures and occurrences. Campbell (2004) examined volume environmental disclosure of UK companies in different industries and its association with membership of environmental lobbying organizations and environmental sensitivity of the industry. The annual reports of 10 UK companies for the period of 1974-2000 were analyzed. Results indicated that the volume of environmental disclosure increased over time. The results also revealed that the membership of environmental lobby groups and environmental sensitivity of the industry are positively associated with environmental disclosure.

Elijido-Ten (2004) investigated determinants of environmental disclosures in Malaysian companies. The results indicated that government power and environmental concern are significantly positively associated with the quality and quantity of environmental disclosure, while, shareholder power and creditor power were not associated with the quality and quantity of environmental disclosure. The findings also indicated that ISO 14001 certification, company size and company age were not significantly associated with the quality and quantity of environmental disclosure. Hamid (2004) investigated corporate social disclosure of 48 Malaysian banks and its relationship with company's characteristics (firm size, financial performance, corporation age, listing status, and company profile). The results proved that size, listing status and age of business do have significant influence on CSR disclosure, while the profitability does not.

Yusoff and Lehman (2004) examined the differences of environmental disclosure practices between Malaysian and Australian public listed companies and Determinants such disclosure. The results showed that Australian companies disclosed more and extensive environmental information compared to Malaysian companies. The results also showed that financial performance and ISO 14001 certification have effect on environmental disclosure of Australian companies, while environmental disclosure practice of Malaysian companies is impacted by ISO certification only.

Haddock (2005) investigated factors influencing environmental disclosure of food companies in the UK. The results indicated that public listing, turnover, brand-names, consumer-focus and media allegations all influence the environmental disclosure practices of the sample companies.

Haniffa and Cooke (2005) examined whether the extent of CSR in the annual reports of 160 Malaysian listed companies is related to culture (background of directors and shareholders), corporate governance (board composition, multiple directorships and type of shareholders) and firm-specific characteristics (size, profitability, multiple listing and type of industry). The study found a strong corporate social disclosure is associated with foreign share ownership, boards dominated by executive directors, boards dominated by Malay directors, and chair with multiple directorships. For firm-specific characteristics, the study proved that size, profitability and multiple listings and type of industry were significantly related to CSR, while gearing did not seem to be related to CSR.

Cormier *et al.* (2005) examined the level and quality of environmental disclosure of 55 large German companies for years from 1992 to 1998, its relationship with information costs, financial condition, media pressure, and fixed assets age, firm size and SEC registrant. Results indicated that environmental disclosure quality was related information costs (measured by risk and ownership), media pressure, and industry membership, while there was no relation between environmental disclosure and financial condition. Moreover, fixed assets age, firm size determined the level of environmental disclosure.

Brammer and Pavelin (2006) examined the level and quality of voluntary environmental disclosure made by a sample of 447 large UK companies and investigated whether the level and quality of such disclosure are determined by firm and industry characteristics. Results of the study revealed that both level and quality of environmental disclosure are positively related with larger firms, highly sensitive industries and less leveraged companies; is negatively associated with the size of the largest shareholding; and has no significant association with media visibility, profitability or the number of non-executive directors. While, environmental performance is significantly and positively related to the quality of environmental disclosure, but has no significant relationship with the level of environmental disclosure.

Hossain *et al.* (2006) examined the relationship between social and environmental disclosure and several corporate attributes in Bangladesh. The study indicated significant differences in levels of social and environmental disclosure. The findings revealed that social and environmental disclosure level is associated with some firm

characteristics while others are not. Specifically, industry type, presence of debentures in the corporate annual reports, and the net profit margin were found to be positively significant in determining environmental disclosure levels. Yusoff *et al.* (2006) examined motivations of environmental disclosure among Malaysian public-listed companies. The study revealed that the key factors influencing environmental disclosure were stakeholders' concern, self-environmental concern and operational improvements.

Huafang and Jianguo (2007) investigated the effect of ownership structure (blockholder ownership, legal person ownership, state ownership, managerial ownership, and foreign shares/listing ownership), board composition (proportion of independent directors and CEO duality) on voluntary disclosures (including environmental disclosures) of publicly listed companies in China, while controlling for firm growth, firm size, firm leverage, and auditor reputation. The study indicated that higher blockholder ownership, foreign shares/listing ownership and proportion of independent directors were positively associated with disclosure, and CEO duality was related with lower disclosure, while state ownership, legal person ownership, and managerial ownership were not related to disclosure. The results also indicated that firm size was positively associated with disclosure, while firm growth was found to be negatively associated disclosure. However, disclosure was not associated to leverage or auditor reputation.

Brammer and Pavelin (2008) investigated whether the quality of voluntary environmental disclosure made by a sample of 447 large UK companies is determined by firm and industry characteristics. The findings indicated that the

quality of environmental disclosure is influenced by a firm's size and the nature of its business activities, while there is no association between the quality of environmental disclosure and the media exposure of companies. Branco and Rodrigues (2008) examined the factors that influence CSR disclosure in the annual reports and websites of Portuguese companies. They found that company size is positively related to both CSR disclosures on the websites and in annual reports, while media exposure was found related to CSR disclosure in annual reports only.

In Malaysia, Amran and Devi (2008) have examined the impact of government variables and foreign affiliation variables on the social responsibility disclosure of Malaysian companies listed on KLSE. The findings indicated that only government variables (government share and dependence on the government) have a positive association with CSR disclosure. They had linked this result to the strong governmental pressure.

Rizk *et al.* (2008) examined the extent of social and environmental reporting made by Egyptian manufacturing companies in their annual reports. The study examined also the effect of government ownership, private ownership and industry membership on social and environmental disclosure. The results indicated that the extent of CSR reporting is low and descriptive in nature. The results also indicated that private companies disclose information relating to environment, customers, and community more than governmental companies. While, governmental companies disclose more information relating to employees than private companies. However, industry membership was found to be associated with the disclosure. Silva (2008) investigated factors influence voluntary environmental reporting in the annual reports

of New Zealand and Australian publicly listed companies. The study revealed that content-quality of voluntary environmental disclosure is significantly and positively related to each variables of company size, sector sensitivity, specific media coverage, profitability (short-term and long-term), while the relation between the content-quality of voluntary environmental disclosure and general media coverage was appeared to be negative.

Pahuja (2009) investigated the influence of some company and industry related variables on environmental disclosure practices of the large manufacturing companies operating in India. The results provided strong evidence in support of the influence of size, profitability, sector, industry and environmental performance on environmental disclosure practices of Indian manufacturing companies.

Reverte (2009) studied the CSR disclosure of 46 Spanish listed companies in their annual reports. He investigated the relationship between the corporate social responsibility disclosure and corporate size, profitability, leverage, ownership concentration, international listing, industry sensitivity and media pressure. The findings revealed that corporate size, industry sensitivity, and media pressure are positively and significantly associated with the CSR disclosure, while profitability and leverage are not.

Said *et al.* (2009) examined extent of corporate social responsibility disclosure of Malaysian public listed companies in their annual reports and corporate websites. The study investigated the relationship between corporate governance, a number of corporate characteristics and corporate social responsibility disclosure. Particularly,

the study examined influence of board size, board independence, duality, audit committee, ten largest shareholders, managerial ownership, foreign ownership, government ownership, and firm size and the profitability (as control variables) on level of CSR disclosure. The results also provided that firm size, government ownership, and audit committee are positively and significantly correlated with the level of corporate social responsibility disclosure, whereas other variables are not.

Tagesson, Blank, Broberg and Collin (2009) examined the effect of the size, industry, profitability, ownership structure, and ownership identity on the extent of social and environmental disclosure of Swedish companies. The results indicated that company size and profitability are positively associated with the extent of social and environmental disclosure. State-owned companies disclose more social information on their websites than privately owned corporations do. The results also suggested that there are significant differences between different industries.

Hassan (2010) examined factors influencing the quantity and quality of corporate social disclosure of UK companies in their annual reports and stand-alone reports for the years 2005 and 2006. Particularly, the study investigated the effects of corporate characteristics (firm size, industry affiliation, profitability and multi-nationality); corporate governance characteristics (board size, board composition, corporate social responsibility committee and block ownership); and media pressure. The results showed that corporate social disclosure is associated with firm size, industry affiliation, board size, social responsibility committee, ownership diffusion, while media pressure was found to be associated with the quantity of CSR disclosure but not associated to the quality of such disclosure.

Abd Rahman *et al.* (2011) examined the relationship of a number of company characteristics (size, age, profitability and leverage) to the level of corporate social responsibility disclosure made by government-linked companies listed on Bursa Malaysia. The study revealed that only size is significantly related to CSR disclosure. Suttipun and Stanton (2011) investigated environmental disclosure and its influencing factors in annual reports of Thai listed companies. The results revealed that most of companies providing environmental information in their annual reports. Environmental policy, environmental activities, and waste management, are the themes of disclosure. The study also revealed that there is a positive relationship between amount of environmental disclosures and size of company.

Rupley *et al.* (2012) investigated quality of corporate environmental disclosure of 127 US firms and its relationship with characteristics of governance and media. The results revealed that the quality of environmental disclosure increased over time. The results also revealed that environmental disclosure quality is positively associated with board independence, board gender diversity, multiple directorships and firm size, while negatively associated with environmental media coverage. Additionally, results indicated that institutional investors affect managerial decisions relating to environmental disclosure only in the face of negative environmental media coverage.

Aburaya (2012) analyzed annual reports of 229 UK companies for the period of 2004-2007. The study examined the quantity and quality of environmental disclosure and its association with corporate governance mechanisms. The results of the study revealed that the quantity of environmental disclosure in annual reports of UK companies is relatively low, while, the quality of such disclosure is comparatively

high. The results also indicated that higher frequency of board meetings, and separation of the dual role of CEO and chairman are associated with higher environmental disclosure quality. Whiles, board size and directors' education are not associated with the environmental disclosure quality. However, institutional ownership is not related to the quality of environmental disclosure category, but is significantly and positively related to the disclosure quality of compliance with environmental laws and standards category, whereas significantly and negatively associated with other environmentally-related information disclosure quality.

Al-Drugi and Abdo (2012) investigated the determinants of environmental disclosures by oil and gas companies operating in Libya. The results revealed that company size, company privatization and company's nationality have a positive relationship with the level of environmental disclosure, while, company age has a negative but insignificant relation with the level of environmental disclosure.

Bayoud *et al.* (2012) conducted a study to explore whether company size, company age, and industry type have impact on level of CSR disclosure in the annual reports of Libyan companies. The quantitative findings revealed that company age and industry type have positive impacts on the level of CSR disclosure, while, the qualitative findings indicated that all proposed factors have positive impacts on the level of CSR disclosure. Oba and Fodio (2012a) investigated the impact of board characteristics on the quality of environmental reporting among listed companies in Nigeria. The results evidenced that firm's size, foreign directors, independent directors, and financial slack have positive impacts on quality of environmental reporting. The study found no association between gender and quality of

environmental reporting, while an inverse relationship was documented between board size and quality of environmental reporting.

Setyorini and Ishak (2012) investigated the relationships between the level of corporate social and environmental disclosure of companies listed in Indonesia Stock Exchange and firm's bonus plan (measured by ROA), leverage, size, Firm's earning management. The findings indicated that the level of corporate social and environmental disclosure is associated with ROA, firm size, and firm earning management, whereas there is no association between the level of corporate social and environmental disclosure and leverage (debt/equity). Soliman, Bahaa-Eldin and Sakr (2012) investigated the impact of ownership structure (institutional ownership, managerial ownership, and foreign ownership) on corporate social responsibility disclosure in Egypt. The results indicated a significant positive relationship between CSR disclosure and institutional ownership and foreign ownership, whereas managerial ownership was found to be negatively associated with CSR disclosure.

Bowrin (2013) examined the extent and factors of social and environmental disclosure made by publicly listed Caribbean companies. The study revealed that the level of social and environmental disclosure in the Caribbean companies was positively related to firm size, industry affiliation, foreign influence and organizational culture. Firm profitability, national culture, importance of public equity financing, gender diversity, and director independence were not statistically related to social and environmental disclosure comprehensiveness. Chang (2013) investigated the potential effects of ownership and capital structure on environmental disclosure. The study revealed that the state ownership, ownership concentration,

financial leverage (debt to-total assets) and long-term debt have significant impacts on environmental information disclosure.

Choi *et al.* (2013) investigated the extent of carbon emissions and climate changes disclosure made by major Australian companies in their in the annual reports and sustainability reports. The study also investigated the variables that explain such disclosures. The study revealed that the extent of carbon disclosure is positively influenced by firm size, the level of emissions, and quality of corporate governance. In addition, firms in emissions intensive industries also showed a positive relationship with the extent of carbon disclosure.

Kolk and Fortanier (2013) investigated the relationship between internationalization and environmental disclosure. The study's results revealed that environmental disclosure is significantly and negatively related to the degree of internationalization, and this relationship is partly mitigated by institutional quality and environmental governance in home and host countries. But the relationship has found to be positive for companies affiliated to environmental sensitivity industries in high-standard countries. While, Momin and Parker (2013) concluded that multinational subsidiaries in Bangladesh have several motivations for engaging in corporate social responsibility reporting practices, ranging from the pursuit of internal legitimacy with their parent to the pursuit of external legitimacy with powerful stakeholders. Roitto (2013) examined factors effecting corporate social responsibility disclosure ratings of 31 Finnish listed companies. The study concluded that of the examined factors only two of them (age of board members, profitability) were found to be determinants of CSR disclosure rating, while others factors were not.

In Malaysia, Said *et al.* (2013) investigated the relationships between the level of environmental disclosure and board characteristics, firm characteristics (business type) and human capital characteristics. The results of the study revealed that the industry type is the most significant variable that influences the level of environmental disclosure, as well as, the chairperson's age, the existence of an independent non-executive chairman, and existence of a CEO with a law background were found to be significantly and positively associated with the level of environmental disclosure.

Darus *et al.* (2013) investigated the factors that influence public-listed companies in Malaysia to communicate their CSR information via corporate websites. The study revealed that, quality of CSR information disclosed on corporate website is low, and the factors that influence the public-listed companies to communicate their CSR information via corporate websites are family and foreign ownership. Haji (2013) investigated the relationships between the extent and quality of CSR disclosures as dependent variables and corporate governance (independent nonexecutive directors, board size, and board meetings), ownership structure patterns (ownership concentration, director ownership, government ownership) and company characteristics (company size, profitability, leverage) as independent variables. The results of the study revealed that government ownership, director ownership and company size have relationships with the extent and quality of CSR disclosures.

Yusoff and Othman (2013) investigated environmental reporting by Malaysian and Australian companies on different mediums including stand-alone reports (environmental reports, social and sustainability reports), corporate websites, and

corporate newsletters. The study revealed that environmental disclosure practice in Australia is influenced by the accreditation of ISO certification and the type of industry while the disclosure practice in Malaysia is only influenced by the accreditation of ISO certification.

In UK, Chithambo and Tauringana (2014) investigated the relationship between company-specific factors and the extent of greenhouse gas (GHG) disclosures made in the annual reports, sustainability reports and web sites of London Stock Exchange financial listed companies. The study indicated that company size, gearing, financial slack and two industries (consumer services and industrials) are significantly associated with GHG disclosure while profitability, liquidity and capital expenditure are not. Hassan (2014) explored the relationship between both corporate governance and degree of multi-nationality and corporate social responsibility disclosure. The empirical results show that governance mechanisms are associated with both the quantity and quality of social disclosure while the degree of multi-national activities appears not to be related to the level of CSD.

Giannarakis (2014) investigated the potential effects of corporate governance and financial characteristics on the extent of CSR disclosure of US companies. The results revealed that firm size and board size are significantly and positively associated with the extent of CSR disclosure, and companies with chief executive officer duality disclose less CSR information, while there extent of CSR disclosure varies from industry to industry.

Darus *et al.* (2014) examined the determinants of CSR reporting for financial institutions in Malaysia over a period from 2008-2011. The study revealed that extent

of CSR reporting is significantly and negatively associated with concentrated shareholdings and positively associated with customer. While government shareholdings, organizational slack, foreign exposure and size variables show insignificant relationships. Joseph *et al.* (2014) examined extent and determinants of the sustainability reporting on Malaysian local council websites. The results of the study indicated that size, Local Agenda (LA) 21 and public sector award are significant predictors of the extent of sustainability reporting on websites. Sulaiman *et al.* (2014) examined investigated the relationships of firm size, profitability, leverage and share ownership distribution to the quality of environmental reporting of companies operating in environmentally sensitive industries in Malaysia. The study indicated that firm size and leverage are significantly and positively associated with the quality of environmental reporting, while profitability and share ownership distribution are not.

He and Loftus (2014) investigated associations between environmental performance and the level and nature of environmental disclosure by listed Chinese companies engaged in environmentally sensitive industries. The study revealed that companies with more favourable environmental performance provide a higher level of environmental disclosure and include a greater proportion of hard disclosure items. In addition, the study showed that there is a significant and positive relation between firm size and CED, while none of the other variables is significantly associated with CED

Lu and Abeysekera (2014) investigated the influences of stakeholders' power (government power, shareholder power, creditor power, independent auditor) and

corporate characteristics (firm size, financial performance, industry membership, overseas listing) on social and environmental disclosure practices of socially responsible Chinese listed companies. The results indicated that corporate social and environmental disclosures are significantly and positively associated with firm size, profitability, and industry classification. Whereas the results revealed that the influences of various stakeholders on corporate social and environmental disclosures are generally weak, except that shareholders have influenced corporate social and environmental disclosures and creditors have influenced corporate disclosures related to firms' environmental performance.

In India, Kansal *et al.* (2014) investigated the relationship between the level of CSR disclosure and a number of financial and non-financial corporate characteristics (namely, company size, profitability, leverage, industry, age, and corporate reputation). They revealed that corporate size, profitability, industry type and corporate reputation are significant factors that influence the social disclosure of Indian companies.

In a developing country of Bangladesh, Muttakin and Khan (2014) examined the potential firm and industry characteristics that determine CSR disclosure by Bangladeshi listed companies. The study revealed that CSR disclosure has positive and significant relationships with export oriented sector, firm size and types of industries, and a negative relationship between CSR disclosure and family ownership.

In another developing country of Iran, Soheilyfar, Tamimi, Ahmadi and Takhtaei (2014) explored the relationship between disclosure quality and corporate governance (including; board size, board independence, chairman tenure, board chairman independence, ownership concentration, CEO duality, and internal audit). The findings indicated that board independence, chairman independence, ownership concentration, CEO duality and internal audit have significant positive association with the quality of disclosure, while, board size and chairman tenure have not.

Dong *et al.* (2015) examined the determinants and economic consequences of CSR disclosure quality. They concluded that larger firms, firms with better CSR performance, greater external financing needs, and stronger corporate governance tend to provide higher quality CSR disclosures. Das *et al.* (2015) examined CSR reporting practices of the listed banking companies in Bangladesh and investigated the potential effects of corporate governance (ownership structure, board size, board duality, and independent director) and company specific characteristics (firm size, firms' profitability and age) on CSR disclosures. The results revealed that, to varying degrees, all listed banks' practices social responsibility in an unstructured manner. The results also revealed that CSR disclosure is positively significant associated with firm size, ownership structure, board size, and independent non-executive director in the board, while firm age and firm profitability are found to be negatively associated with the CSR disclosure, but no relationship has found between board leadership structure and the CSR disclosure.

Esa, Anis and Remali (2015) investigated potential influencing of company characteristics (company size, profitability, leverage and industry type) ownership structure (ownership concentration, foreign ownership, government ownership and

family ownership) and board structure (board size, board independence, board qualification and family members on board) on the level of CSR disclosure of Malaysian top 100 companies. The results revealed that company size, profitability, board size, independent non-executive directors on the board were found to be significantly and positively associated with the level of CSR disclosure. Whiles, ratio of family members on the board was found to be negatively associated with the level of CSR disclosure. However the study revealed that the associations between the level of CSR disclosure and each of leverage, industry type, ownership concentration, foreign ownership, government ownership, and board qualification are not significant.

Michelon *et al.* (2015) investigated CSR reporting practices of 112 companies listed on the London Stock Exchange for the years 2005–2007. The study indicated that companies do not provide a high quality of CSR information. Issuers of stand-alone reports are likely to provide more disclosure than firms releasing CSR information in the annual report but not a greater quality of disclosure.

Nurhayati *et al.* (2015) explored the factors that affect extent of social and environmental disclosure in annual reports of Indian textile companies. The results revealed that firm size, profitability, international brand, international certification, audit committee independence, CEO duality and year of reporting are statistically significant factors in explaining the variation of social and environmental disclosure. Dibia and Onwuchekwa (2015) examined the effect of a number of factors (namely, firm size, profitability, leverage and audit firm type) on environmental disclosure using a sample of 15 oil and gas companies from Nigeria. The findings showed that

there is a significant and positive relationship between firm size and corporate environmental disclosure, while, the relationship between profitability, leverage, audit firm type and corporate environmental disclosure is insignificant.

More recently, Nurhayati *et al.* (2016) investigated the factors determining the social and environmental reporting of Indian textile and apparel firms. The results revealed that corporate size, brand development and audit committee size are significant factors determining the extent of social and environmental reporting, while board independence and level of ownership are not, and Weber, Schiemann, Guenther & Guenther (2016) investigated role of stakeholders (namely, government, general public, media, employees, and customers) in international firms' carbon disclosure. The results confirmed that all these stakeholder groups are associated with carbon disclosure.

2.3.6.1 Empirical Studies on Factors Influencing Quality of Environmental Disclosure

Reviewing pertinent prior literature revealed that previous studies proposed various factors that have the potential to influence environmental disclosure practices. Most of previous studies have concentrated on corporate characteristics, ownership structure, and financial performance.

2.3.6.1.1 Company related characteristics

Company related characteristics were of the common factors examined in most previous studies. Pertinent literature showed that some company characteristics have been extensively examined, while, other have been given less attention or completely ignored. However, in addition to some company specific factors have been

commonly proposed by the literature, this study includes some factors that have not received sufficient attention in previous studies, such as close to market, and a new variable, namely, type of company (independent or constrain company).

2.3.6.1.1.1 Company Size

The relationship between firm size and social and environmental disclosure has been extensively examined in prior studies, but the related studies still revealed mixed results regarding this relationship. Several studies revealed a positive relationship between firm size and social and environmental disclosure (e.g. Abd Rahman *et al.*, 2011; Adams, 2002; Adams *et al.*, 1998; Alciatore and Dee, 2006; Al-Drugi and Abdo, 2012; Branco and Rodrigues, 2008; Bowrin, 2013; Brammer and Pavelin, 2006; Chithambo and Tauringana, 2014; Choi *et al.*, 2013; Cormier and Magnan, 1999; Das *et al.*, 2015; Deegan & Rankin, 1996; Deegan and Gordon, 1996; De Villiers and Barnard, 2000; Dibia and Onwuchekwa, 2015; Dong *et al.*, 2015; Esa *et al.*, 2015; Giannarakis, 2014; Gray *et al.*, 2001; Hackston and Milne, 1996; Hamid, 2004; Haji, 2013; Hassan, 2010; Joseph *et al.*, 2014; Kansal *et al.*, 2014; Lu and Abeyssekera, 2014; Muttakin and Khan, 2014; Neu *et al.*, 1998; Nurhayati *et al.*, 2015; Oba and Fodio, 2012a; Pahuja, 2009; Patten, 1991; Purushothaman *et al.*, 2000; Reverte, 2009; Said *et al.*, 2009; Setyorini and Ishak, 2012; Silva, 2008; Sulaiman *et al.*, 2014; Suttipun and Stanton, 2011; Tagesson *et al.*, 2009; Trotman & Bradley, 1981; Zain, 1999; Zhang *et al.*, 2009).

However, although the results of previous studies support, to large extent, the positive relationship between firm size and social and environmental disclosure, there are a few studies which have broken the consistency of the previous studies

results as they indicated that firm size is not related to social and environmental (cf. Bayoud *et al.*, 2012; Buhr and Freedman, 2001; Darus *et al.*, 2014; Halme and Huse, 1997; Soheilyfar *et al.*, 2014). While Tantish (2003) showed that firm size is weakly related with the level of social and environmental disclosure. Hence, more investigation in particular context across countries may provide evidence as to whether there is a relationship between the variables or not.

2.3.6.1.1.2 Type of Company

Prior literature gave more attention to some firm characteristics, while, other characteristics have been given less attention or completely ignored. For example, a company characteristic of an oil and gas company or industry-specific firm characteristic, namely, type of company (independent or constrain company) have never been examined in the related literature.

Oil and gas industry is characterized by some features such as, high level of uncertainty and risk, high costs, and high level of technology (Baik, 2001; Bindemann, 1999; Kaiser and Pulsipher, 2004). Due to these characteristics, the rights to explore, develop, and produce oil and gas usually granted to consortia (it called also, consortium or joint ventures) of enterprises. However, the rights to explore, develop, and produce oil and gas can be granted to a single company (Bindemann, 1999; Wright and Gallun, 2005). Because the arrangement of joint ventures (JVs) is commonly applied in oil and gas industry, it is worthy to examine whether such arrangement has any effect on environmental disclosure practices. Thus, this study has been extended to include the type of company (represented by the individual/single company vs. joint venture/project-based company).

2.3.6.1.1.3 Close to Market

Closeness to market is a firm characteristic that has been given less attention in prior social and environmental disclosure literature. A few previous studies had examined the relationship between close to market (brand name and consumer focused firms) and social and environmental disclosure (cf. Benito and Benito, 2006; Haddock, 2005; Haddock-Fraser and Fraser, 2008; Jablonowski, 2002; Nurhayati *et al.*, 2015; Stanwick and Stanwick, 1999). Thus, this lack of research on relation between close to market and company's provision of corporate environmental information motivates to examine this issue in a particular context of oil and gas industry. Moreover, it is important to examine effect of close to market on environmental disclosure quality in oil and gas context. This because of that oil and gas industry is a multi-stages industry involving different complex operations. Some oil and gas operations such as exploration, development and production can be considered as far away from market and consumers, whereas refining and marketing operations can be considered as close to market and consumers.

In fact, the final aim of oil and gas industry is to supply the industries and consumers with their needs of petroleum products in several states and kinds. A producing company sells its oil and gas directly to an end-user or to a trader or broker. While cured oil and natural gas of a producing company may be sold to brokers, refineries or other integrated oil and gas companies, the company may integrate all activities, upstream and downstream, including refining and marking activities. According to Barry (1993), most producing companies prefer to sell their products directly to an end-user, but they may use a trader or a broker either to assist in finding previously unidentified markets, or because a known buyer is only dealing with sellers through a

avored broker. However, when a company has finished products distributed to end-consumers, regardless of whether the company does the distribution itself or by its brokers, its name will be well known to the final consumers. Therefore, this company faces more public pressure, which in turn drives it to disclose more environmental information with higher quality. Thus, it is worthy to investigate the relation of close to market (proxied by trail sales or brand) with the environmental disclosure quality in oil and gas industry.

2.3.6.1.2 Ownership Structure

Ownership characteristics are another category of variables that have received considerable attentions from researchers concerning social and environmental disclosure. Various aspects of ownership structure have been considered in previous studies (Raithatha and Bapat, 2014). Previous studies revealed that companies with different ownership structures vary in disclosing their environmental disclosure. Lapointe, Cormier, Magnan & Gay-Angers (2005) argued that the firm's ownership structure can influence its disclosure strategy. Similarly, Peiyuan (2005) argued that companies with different ownership structures vary in their willingness to disclose environmental information.

Numerous prior empirical studies highlighted the important influence of ownership structure towards social and environmental disclosure incentives (cf. Aburaya, 2012; Brammer & Pavelin, 2008; Chang, 2013; Cormier *et al.*, 2005; Darus *et al.*, 2013; Das *et al.*, 2015; Eljido-Ten; 2004; Esa *et al.*, 2015; Haji, 2013; Halme and Huse, 1997; Haniffa and Cooke, 2005; Hassan, 2010; He and Loftus, 2014; Huafang and Jianguo, 2007; Nurhayati *et al.*, 2015; Reverte, 2009; Rizk *et al.*, 2008; Roitto, 2013;

Rupley *et al.*, 2012; Said *et al.*, 2009; Sulaiman *et al.*, 2014; Tagesson *et al.*, 2009). Various aspects of ownership structure like ownership concentration, foreign ownership, institutional ownership, and government ownership have been considered in these studies. However, the results of previous studies are mixed.

2.3.6.1.2.1 Ownership Concentration

With respect to ownership concentration, several previous studies provided evidence about the influence of ownership concentration on social and environmental disclosure practices. For example, Cormier and Magnan (1999), Cormier and Magnan (2004), Brammer and Pavelin (2006), Hassan (2010), Darus *et al.* (2014) revealed a significant and negative relationship between social and environmental disclosure and concentrated ownership. While, other studies revealed contrasting findings; for example, Halme and Huse (1997), Tantish (2003), Said *et al.* (2009), Haji (2013), Sulaiman *et al.* (2014), Esa *et al.* (2015), found no significant relationship between ownership concentration and social and environmental disclosure. However, Chang (2013) indicated that firms with concentrated ownership disclose more environmental information.

It is noted that, the developed world is experiencing wide distribution of firm's shares between large numbers of shareholders, whereas the tendency of heavy ownership concentration is widely found in developing world settings (Huang, Luther, Tayles and Haniffa, 2013; Laporta, Silanes and Shleifer, 1999). So, it is worthy retesting the effect of ownership concentration on the environmental disclosure quality in the context of developing countries.

2.3.6.1.2.2 Foreign Ownership

Foreign ownership is also one of the ownership structure dimensions that were striking in literature. Prior studies also showed mixed results regarding the relationship between foreign ownership and social and environmental disclosure. For example, Haniffa and Cooke (2005) found a strong relationship between corporate social disclosure and foreign share ownership. In a similar Peiyuan (2005) showed that companies with foreign capital are more likely to disclose environmental information than others. Chapple and Moon (2005) found a significant relationship between international exposure in terms of foreign ownership and CSR disclosure. Darus *et al.* (2013) revealed that, quality of CSR information disclosed on corporate website is positively influenced by the foreign ownership. However, some previous studies found no relationship between foreign ownership and social and environmental disclosure (cf. Esa *et al.*, 2015; He and Loftus, 2014; Said *et al.*, 2009)

2.3.6.1.2.3 Institutional Ownership

Another aspect of ownership structure that the previous studies focused on is institutional ownership. Prior literature showed contradictory arguments and empirical results about the effect of institutional ownership on disclosure in general and environmental disclosure in particular. It was argued that companies conducting CSR are expected to be more attractive in the eyes of investors and especially institutional investors (Roitto, 2013).

The major suppliers of funds to financial markets are institutional investors and they often control large capital proportions and they have strong professional experience;

therefore, they require transparent disclosure for purpose of better estimation of future cash flow (Ali *et al.*, 2007). In this regard, institutional investors are deemed to be more sensitive to corporate disclosure practices (Bushee and Noe, 2000) based on the following; 1) they could gravitate to firms having good quality of disclosure as such disclosure could minimize the trades price impact, 2) good disclosure may impact the possibility of successful trading opportunities and in this in turn, would increase institutional investors' interests, 3) active institutions in corporate governance could lean towards firms having informative disclosure if they depend on public disclosure or they lack the resources to obtain hard-to-get private information and finally, 4) corporate disclosure is a reasonably-cost tool to monitor and manage performance.

Raithatha and Bapat (2014) argued that "due to higher ownership stake, institutional shareholders may influence the decision making of board, they may even encourage higher disclosures in the financial statements"(p. 878). Barako (2007) argued that "due to the large ownership stake, institutional investors have strong incentives to monitor corporate disclosure practices; thus, managers may voluntarily disclose information to meet the expectations of large shareholders" (p. 117).

Other authors argued for negative association between the level of institutional ownership and voluntary disclosure. For example, Lapointe *et al.* (2005) argued that "In the specific context of Switzerland, institutional ownership is likely to reduce the level of voluntary disclosure because institutional blocks are most often held by financial institutions that are already involved in the day-to-day operations."(p. 18).

Prior empirical studies also show varying results regarding association of institutional ownership with disclosure (in general or social and environmental disclosure in particular). While some studies indicated relation (either positive or negative relation) between the two variables, other studies found no relation between them. For example, Healy, Hutton and Palepu (1999) indicated a positive disclosure quality-institutional ownership relationship. Bushee and Noe (2000) concluded that the higher the institutional ownership, the greater will be the disclosure quality. Similarly, Barako (2007) documented that the greater the shares held by institutional shareholders, the greater will be the voluntary disclosure level. Htay, Said and Salman (2013) investigated the factors influencing disclosure quality of listed banks on Bursa Malaysia. The results revealed that better disclosure quality of the annual reports can be achieved by having lower ownership by the institutional shareholders.

Other studies revealed association between institutional ownership and disclosure in terms of volume, but on contra-direction. For example, Lapointe *et al.* (2005) indicated that institutional ownership level is adversely associated to the information disclosed by Swiss firms in terms of both quality and quantity as firms with high percentages of institutional ownership disclose less information than others. They argued that this is because such firms are likely to employ private communication method to relay its information to its main institutional partners.

However, another stream of results revealed no association between institutional ownership and disclosure. For example, Ginglinger and L'Her (2002) and Ali, Trabelsi and Summa (2007) found no relation between institutional ownership and disclosure quality. Rupley *et al.* (2012) found that long-horizon shareholdings do not

appear to influence the quality of voluntary environmental disclosure. A recent study of Raithatha and Bapat (2014) found no association between institutional investors' shareholding and disclosures.

2.3.6.1.2.4 State Ownership

State ownership is also one of dimensions those considered in prior literature of social and environmental disclosure. But this variable was not often considered, as a few studies have considered this dimension (cf. Amran and Devi, 2008; Chang, 2013; Esa *et al.*, 2015; Haji, 2013; He and Loftus, 2014; Rizk *et al.*, 2008; Said *et al.*, 2009; Tagesson *et al.*, 2009), this probably because the majority of studies in this area are conducted in western context where government ownership is not common (Tagesson *et al.*, 2009).

However, prior literature showed contradictory arguments and varying results regarding the association of government ownership with social and environmental disclosures. Some studies argued for a positive relation between government ownership and disclosure. For example, Amran and Devi (2008) argued that, the amount of shares owned by government bodies in firms will give them the power to intervene and generate pressure for such firms to disclose additional information in order to satisfy public expectation.

In contrast, it was argued that state owned companies face fewer pressures for voluntary disclosures. There are many reasons that weaken the pressures for voluntary disclosures by state-owned firms. First, shares that are owned by the state are not publicly tradable and the government or the state holders may concentrate on

distributing wealth and sustaining the order in society (Xu and Wang, 1999) – in other words, enhancing shareholder value may not be the state-owned firm's main objective (Huafang and Jianguo, 2007). Second, the government is the sole or the majority shareholder in a state-owned firm and it is able to seek information from different sources and to gain access to financing compared to its non-state counterparts (Eng and Mak, 2003). Lastly, the social and environmental reports of such firms are often not as scrutinized by civil society groups than non-state owned firms (Frynas, 2009). Similarly, it was argued that, state-owned companies are less dependent on the capital market to finance their projects and may have less motivation to provide information to improve their image, while, companies with lower levels of government ownership are more likely to be incentivized to disclose greater environmental information to build a good relationship with the capital market as well as with the government (He and Loftus, 2014).

Some empirical studies showed negative association between state ownership and environmental disclosure; for example, Sustainability Ltd. and UNEP (1999) found that the overall rate of environmental reporting of oil and gas companies is brought down by, among others, state-owned companies. Huafang and Jianguo (2007) found a negative but insignificant result for the association between voluntary disclosure and state ownership of companies in China. They argued that this may be attributed to the fact that China motivates companies to increase corporate transparency and state-owned firms are starting to be aware of voluntary disclosure.

On the other hand, other previous studies such as Li (2006), Amran and Devi (2008), Peng (2009); Said *et al.* (2009) and Song and Zu (2009) revealed that government

ownership is positively and significantly correlated with the level of corporate social responsibility disclosure. Similarly, Tagesson *et al.* (2009) revealed that state-owned companies disclose more social information on their websites than privately owned corporations do, and Chang (2013) conformed that firms with higher state ownership tend to provide more environmental information compared to firms that with higher non-state ownership.

However, another stream of results revealed no association between government ownership and CSR disclosure. For example, Haji (2013) revealed mixed results, as he observed the government ownership did have a significant and positive relationship with the quality of corporate social disclosure in the year 2006, but this relationship has not been evidenced in the year 2009. Recently, Darus *et al.* (2014) found no significant relationship between CSR reporting and government shareholdings, and Esa *et al.* (2015) also revealed that the association between the level of CSR disclosure and government ownership is not significant.

State ownership is inherent in oil and gas industry in developing countries. Many oil and gas companies in developing economies are either fully state-owned (e.g. Saudi Aramco, Kuwait Petroleum) or partially state-owned (e.g. Indian Oil, Petrobras of Brazil) where the state has an important interest in them (Frynas, 2009). Moreover, majority of the world's oil and gas reserves are owned and overseen by state-owned companies from developing countries (Frynas, 2009). Specifically, around half of the global known oil and gas reserves are confined to the control of five national companies in the developing nations. These are; Saudi Aramco, Kuwait Petroleum,

National Iranian Oil Company, Sonatrach of Algeria and Abu Dhabi National Oil Company (Marcel and Mitchell, 2005, as cited in Frynas, 2009).

More than half of the world's fifty largest oil and gas companies are state-owned (United Nations Conference on Trade and Development 2007, as cited in Frynas, 2009). However, as shown in Table 2.1, of the world's ten largest oil and gas producing companies, six are state-owned; five of them are from developing countries.

Table 2.1
Top 10 Oil Companies Worldwide Based on Daily Production as of 2014

| Rank in world Production | Company | Home country | State ownership (%) | Daily production (million barrels of oil or equivalent) |
|--------------------------|---------------------|----------------|---------------------|---|
| 1 | Saudi Aramco | Saudi Arabia | 100 | 12 |
| 2 | Gazprom | Russia | 51 | 9.7 |
| 3 | NIOC | Iran | 100 | 6.4 |
| 4 | Exxon Mobile | USA | 0 | 5.3 |
| 5 | CNPC/PetroChina | China | 100 | 4.4 |
| 6 | BP | UK | 0 | 4.1 |
| 7 | Royal Dutch Shell | Netherlands/UK | 0 | 3.9 |
| 8 | Petroleos Mexicanos | Mexico | 100 | 3.6 |
| 9 | Chevron | USA | 0 | 3.5 |
| 10 | KPC | Kuwait | 100 | 3.2 |

Source: Adapted from <http://www.statista.com/>

In oil and gas industry, state ownership may be established through establishment of a corporation fully or mostly owned by the government. Government may also enter into a joint venture arrangement with a private company, either a local or foreign oil company to explore for, develop and produce oil and/or gas. Also, state-owned shares may be acquired through nationalization⁷. Based on this discussion, it is

⁷Nationalization refers to the process of taking an industry, company or asset into the public ownership of a government or state. Nationalization may take place with or without compensation (expropriation) to the former owner. In previous decades, oil and gas industry in developing countries has witnessed a number of nationalization processes. For instance, in 1953 the Anglo-

worthy to re-examine this relationship. Thus, examining a specific sector, such oil and gas industry across countries, will shed a light on new information on whether or not a relationship exists between quality of environmental disclosure and state ownership.

2.3.6.1.3 Economic Performance

Economic performance variables also were extensively considered in previous studies relating to social and environmental reporting. A wide range of prior research has examined the association between corporate economic performance (as an explanatory variable) and disclosure level (Hossain, *et al.*, 2006). Social and environmental disclosure was a specific type of disclosure that has received great attention from researchers. Corporate economic performance- among others - was widely examined as a predicting factor of extent and quality of social and environmental disclosure. However, pertinent research showed mixed results.

Good financial performance is seen as an incentive for firms to disclose more detailed environmental information. As many previous studies have confirmed, the better the financial stands of a company, the higher level of environmental disclosure. Alnajjar (2000) indicated positive associations between financial performance and voluntary environmental disclosures. Cormier and Magnan (1999) highlighted relationships between disclosure of environmental performance and several financial and economic performance indicators with the inclusion of return

Persian Oil Company in Iran was nationalized; in 1938, petroleum industry of Mexico was expropriated, in 2007 Venezuela stripped the world's biggest oil companies of operational control over massive Orinoco Belt crude projects, in 1972, the Saudi Arabian NOC, Petromin, acquired 20 percent of the assets of Aramco, and later this percentage was increased to 60 percent then to 100 percent, as the company became fully owned by the government. Many other petroleum companies in different developing countries (including, Libya, Kuwait, Nigeria) have been nationalized.

on assets, and debt ratio as firms that are financially healthy opt to disclose higher environmental information.

Al-Tuwaijri, *et al.* (2004) indicated that environmental reporting is positively associated to economic performance. Islam and Deegan (2010b) suggested that in developing countries, an organization will embrace social responsibilities, including disclosing of related information, to the extent that there is an economic imperative to do so. They added that, unless pressure or economic incentives are present, it is likely that, organizations in developing nations will be laggard in acknowledging social responsibilities that have already been acknowledged by the international community. Inconsistently, other researchers (e.g. Hackston and Milne, 1996) found no association between the two abovementioned variables. Different studies used different proxies for economic performance. The proxies for corporate economic/financial performance that mostly used by previous studies are profitability and leverage.

2.3.6.1.3.1 Profitability

Some previous studies, for example, Roberts (1992), Gray *et al.* (2001), Haniffa and Cooke (2005), Ying (2006), Silva (2008), Pahuja (2009), Tagesson *et al.* (2009), Zhang *et al.* (2009), Setyorini and Ishak (2012), Yin (2012), Roitto (2013), Kansal *et al.* (2014), Esa *et al.* (2015), Nurhayati *et al.* (2015) reported a positive relationship between profitability and social and/or environmental disclosure.

Contrastingly, others studies revealed a negative profitability and social and environmental disclosure. For example, Leary (2003) showed a negative association

between the level of social and environmental disclosure and profitability, indicating that companies that are less profitable are wont to disclose greater information concerning their social and environmental performance. A recent study of Das *et al.* (2015) showed that CSR disclosure is negatively associated with firms' profitability.

However, there were some empirical studies such as Patten (1991), Hamid (2004), Brammer and Pavelin (2006), Hackston and Milne (1996), Brammer and Pavelin (2008), Reverte (2009), Abd Rahman *et al.* (2011), Bowrin (2013), Choi *et al.* (2013), Haji (2013), Chithambo and Tauringana (2014), Giannarakis (2014), Sulaiman *et al.* (2014), Dibia and Onwuchekwa (2015), Dong *et al.* (2015) indicated that there is no significant association between profitability and social and environmental disclosure. Thus, these mixed results regarding the relationship between profitability and social and environmental disclosure give good grounds for re-examination of the relationship between the two variables.

2.3.6.1.3.2 Leverage

Firm leverage (as financial performance indicator) is another factor that has been extensively considered in previous studies relating to social and environmental reporting. From reviewing related literature, it can be noted that there are different results regarding association between leverage as a proxy for economic performance and SRD/ED. While some results are confirming the existence of association, others are not. Even within studies, those that concluded presence of the relation, there is difference regarding the sign of such relation (i.e. positive or negative). For example, Adams (2002), Alciatore and Dee (2006), Chang (2013), Chithambo and Tauringana (2014), and Sulaiman *et al.* (2014) found a significant positive relationship between

leverage ratio and social and environmental disclosure. While, Brammer and Pavelin (2006), Ying (2006) Pahuja (2009), and Muttakin and Khan (2014) also indicated a relationship between leverage ratio and social /environmental disclosure, but on contrary directions.

However, other studies were not supportive for any relation between leverage ratio and social and/or environmental disclosure (cf. Abd Rahman *et al.*, 2011; Choi *et al.*, 2013; Giannarakis, 2014; Dibia and Onwuchekwa, 2015; Dong *et al.*, 2015; Esa *et al.*, 2015; Haji, 2013; Haniffa and Cooke, 2005; Reverte, 2009; Roitto, 2013; Soheilyfar *et al.*, 2014). Thus, literature review has shown inconclusive results regarding whether a relationship between leverage and social and/or environmental disclosure exists and if so, what is its sign. So, it is considered to be productive to re-examine empirically the relationship between the two variables.

2.3.6.1.4 Other Factors

In addition to corporate characteristics, ownership structure and financial performance related variables that have been considered within social and environmental disclosure literature, other variables, such as multi-nationality status and environmental certification have been also concerned, but with a lesser attention.

2.3.6.1.4.1 Multi-nationality

With regard to multinational status, it was argued that, with globalization environment, and in today's borderless world, companies are encouraged to do businesses and exploit investment opportunities across their national boundaries, and the number of international companies is steadily increasing (Mustapha, 2009;

Rahman, 2004). Business organizations are operating in an open environment in the globe. In the context of oil and gas industry, because of the challenges of accessing risk capital and the lack of expertise and skill required for exploring resource and development, majority of developing countries grant exploration and development rights of oil and gas resources to foreign firms having sufficient resources in terms of expertise, capital and technology (Pongsiri, 2004).

Multinational companies' subsidiaries in developing nations may be deemed as important to the host countries' economies (Hossain *et al.*, 2006). Especially, oil and gas operations in developing countries are often conducted by multinational companies or subsidiaries of international companies. These multi-national oil and gas companies are subjected to the prevailing regulations of host countries in addition to the prevailing regulations in their original countries (Kamil, 1992). Environmental issue in a developing country remains one of the key concerns for a multinational company (Lindgreen, Valerie and Franc, 2009).

Prior research pointed a global trend to increase environmental awareness in the international companies, especially oil companies (Eljayash *et al.*, 2012). Particularly, public interest in environmental degradation resulting from the operations of multinational oil and gas companies has increasingly manifested in many developing countries (Eweje, 2006). The emerging issues of globalization and internalization place great pressure on corporate environmental reporting practice (Yusoff and Othman, 2013).

Although environmental aspects are related closely with international trade and the environment is one of the top factors focused on in international business (Lee, 2001), and sustainability reporting (including environmental reporting) is wide application in multi-national firms (Michelon *et al.*, 2015), prior literature concerning social and environmental disclosure revealed little examination of the impact of multi-nationality on such disclosures (Hassn, 2014). Specifically, Eljayash *et al.* (2013) pointed out that there is a lack of literature relating to how environmental information is disclosed by national and international oil and gas companies operating in developing countries, and further investigation is required. Eljayash *et al.* (2013) argued that despite the similarity in oil operations between companies operating in the oil sector but accounting practices may differ among themselves as a result of the location of operations and the surrounding systems.

Moreover, previous studies provided mixed results on the relationship between multi-nationality and social and environmental disclosure. For example, Chapple and Moon (2005) found a strong relationship between international exposure in terms of international sales, and CSR reporting. Peiyuan (2005) noted that, a company operating in a certain country based abroad is exposed to public pressures at home and abroad. This, in turn, enforces the company to perform, environmentally better and disclose more information.

Bowrin (2013) suggested that companies with affiliations to countries with more extensive social and environmental disclosure are more likely to adopt the social and environmental disclosure practices than those companies without such affiliations. Eljayash *et al.* (2013) revealed that international oil and gas companies revealed

more environmental information in annual reports than national corporations. Kolk and Fortanier (2013) indicated that there is a positive relationship between environmental disclosure and the degree of internationalization for firms in high-sensitivity sectors from high-standard countries. Contrarily, some previous studies (e.g. Branco & Rodrigues, 2008; Hossain, *et al.*, 2006; Pahuja, 2009) showed no significant relation between international experience and social and environmental disclosure. Based on the above discussion, it is worthy to investigate the relation of environmental disclosure and multinational status.

2.3.6.1.4.2 Environmental Certification

In respect of environmental certification, as mentioned earlier, environmental issues have increasingly drawn the attention of the world at different levels. Corresponding to this increasing attention, several voluntary environmental standards and certificates are available around the world. The International Standards Organization (ISO) has developed a range of standards. Among those standards is corporate responsibility toward the environment, referred to as ISO 14000 series including ISO 14001. The ISO 14001 published on September 1, 1996 by the International Organization for Standardization, is considered as the most popular environmentally-related standard; a standard that provides the basic framework for the establishment of Environmental Management System (EMS). Environmental certification is considered as a signal indicating a firm's interest and willingness to improve its environmental performance (Baba, 2004).

Organizations seeking ISO 14001 certification are encouraged by many motivations such as, environmental improvements, corporate image, improvement of relations

with authorities and communities, and increasing open trade opportunities and market strengths (Corbett, Luca & Pan, 2003; Husseini, 2001). In addition, ISO 14001 certification offers external parties the relevant confidence as it evidences the corporations' control over their operations and activities, and their commitment to adhering with all the required environmental legislation and regulations, and that they are constantly enhancing their environmental performance.

Moreover, ISO 14001 also helps in enhancing the performance of the organizations and in positively impacting their business outcome (Yusoff and Lehman, 2004). Organizations adopting ISO 14001 are able to demonstrate their commitment to environmental protection without stress from stringent regulation (Sunderland, 1997). Furthermore, it is believed that in the future, ISO 14001 will be a requirement for entering the market place, and its implementation will be ensured by market forces through the supply chain (Watson and Emery, 2004). However, companies need to systematically organize, standardize and specify their current environmental protection processes in order to obtain ISO14001 certification (Baba, 2004).

According to Peiyuan (2005), issuers of environmental standards and certificates are considered as stakeholder group that is exercising stress on companies. Although environmental certificates issuers are recognized as stakeholders, the influence of this stakeholder on firm's environmental disclosure has rarely been investigated (e.g. Elijido-Ten, 2004; Nurhayati *et al.*, 2015; Yusoff and Lehman, 2004; Yusoff and Othman, 2013).

Previous studies have produced inconsistent results concerning the relationship between environmental certification and environmental disclosure. Some empirical studies evidenced positive relationship between these two variables. For example, Yusoff and Othman (2013) investigated environmental reporting by Malaysian and Australian companies and potential influencing factors for the environmental reporting. The study indicated that environmental disclosure practice in both Malaysia and Australia is influenced by the accreditation of ISO certification. Nurhayati *et al.* (2015) revealed that international certification obtained (such as ISO 14001) is statistically significant factor in explaining the variation of social and environmental disclosure.

However, Elijido-Ten (2004) did not provide restrictive evidence on this relationship, as the study indicated that ISO 14001 certification seemed significant in the univariate outcome, but not in the multivariate one. Thus, further investigation in a particular context, such as, oil and gas sector, will provide evidence whether or not companies obtaining environmental certification do disclose better environmental.

2.3.6.1.4.3 Membership of Industry's Associations

Association's membership in oil and gas industry has become very common (IPIECA, OGP & UNEP, 2002). There are many international, regional and national petroleum industry associations around the world. For example; the Oil Industry International Exploration and Production Forum (E&P Forum), European Petroleum Industry Association (EUROPIA), Regional Association of Oil and Natural Gas Companies in Latin America and the Caribbean (ARPEL), American Petroleum Institute (API), Australian institute of Petroleum (AIP), Petroleum Association of

Japan (PAJ) Norwegian Oil Industry Association (OLF), and South African Oil Industry Association (SAPIA). Such associations are considered stakeholders for an oil and gas company (Ermilov, 2012; sustainability & UNEP, 1999). Despite widespread petroleum industry associations and interest of companies in membership of these associations, (which considered secondary stakeholders), especially in oil and gas industry, the related literature have never considered the effect of this stakeholder (i.e. industry associations) on the social and environmental disclosure.

This gives the current study a new dimension by comparing the differences in disclosure quality between companies based on having a membership of an industry's association. So, this study expands the literature related to stakeholder power toward environmental disclosure by examining the relationship between membership of industry's associations and environmental disclosure quality in oil and gas companies.

In conclusion, reviewing pertinent prior literature revealed a significant number of studies that have investigated the environmental disclosure (see Appendix 1). These studies address the different aspects of environmental disclosure in developed and developing countries such as disclosure quantity, disclosure quality, type of disclosure, the media of disclosure, and the factors influencing disclosure practices.

However, the majority of previous studies have concentrated on disclosure quantity, while little attention has been given to disclosure quality. Moreover, the majority of these studies focused on a sole media of reporting (often annual report), while, a few studies have covered several reporting mediums. Very few studies have compared

between different mediums of reporting. However, no study has compared different reporting mediums of environmental information regarding their disclosure quality. In addition, the literature has not given sufficient attention to some factors that potential to influence the quality of environmental disclosure such as close to market, institutional ownership, state ownership, multi-nationality and environmental certification. Furthermore, some factors such as type of company (independent or constrain company) and industry' association membership were ignored as they have never been examined in the related literature.

Most of studies related to environmental disclosure quality have concentrated on developed countries, while, there is a lack of studies addressing the quality of environmental disclosure in developing countries. In terms of sector, there are a few studies examined environmental disclosure in oil and gas industry (cf. Alciatore and Dee, 2006; Al-Drugi and Abdo, 2012; Barr, 2007; Bose, 2006; Dibia and Onwuchekwa, 2015; Eljayash *et al.*, 2012; Eljayash *et al.*, 2013; Guenther *et al.*, 2007; Heflin and Wallace, 2014; Oba and Fodio, 2012b; Patten, 1992; Summerhays and De Villiers, 2012; Sustainability Ltd. & UNEP, 1999). Moreover, with exception of Oba and Fodio (2012a) and Eljayash *et al.* (2012), there have been no studies done on the quality of environmental disclosure in oil and gas industry. In addition, these two studies are suffering from many limitations such as limiting themselves to annual reports and the samples are small. Furthermore, the samples in prior studies have tended to be small and more concentrating on developed countries. However, the prior research has also shown inconclusive results regarding the relationships between the environmental disclosure quality and some independent variables, and

their relationship signs and therefore it is considered to be productive to empirically re-examine the relationships between them.

Therefore, this study attempts to fill the existing gaps and overcome the limitations of the literature by the following: 1) investigating environmental disclosure quality of oil and gas companies in developing countries; 2) investigating the main reporting mediums of environmental information (namely, annual reports, stand-alone environmental reports and corporate homepages in aggregate; 3) investigating whether there is any difference between various reporting mediums in terms of disclosure quality; and 4) this study extends to include the type of company (represented by the individual/single company vs. joint venture/project-based company), and the membership of industry's associations is included in the investigation of environmental disclosure quality determinants as an independent variable. Furthermore,, this study also consider the practices of a relatively large sample (116) of oil and gas companies from nineteen developing countries.

2.4 Summary

This chapter reviewed some of the existing literature on social and environmental disclosures. This study attempts to investigate the issues of quality of environmental disclosure, differences in disclosure quality among various reporting mediums of environmental information, and factors influencing the quality of environmental disclosure. To gain deep understanding of these issues as per extant of pertinent research, focus was placed on three aspects of social and environmental disclosure they are; the level of quantity and quality of disclosure, the mediums used for such disclosure, and the factors influencing the disclosure practices. The studies reviewed

include research relating to sustainability/ social responsibility or environmental disclosure.



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CHAPTER THREE
THEORETICAL FRAMEWORK
AND HYPOTHESES DEVELOPMENT

3.1 Introduction

The present chapter provides the theoretical framework of the study and explains the development of hypotheses on the basis of relevant theories and prior findings. Three relevant theories are explained, namely, political economy, stakeholder, and legitimacy theories. Then the theoretical framework that outlines the expected relationships between the independent variables and the dependent variable is diagrammed. Next, the hypotheses based on the framework are developed.

3.2 Theories

The voluntary nature of the environmental disclosure leads to the question of why it occurs (Deegan, 2002). In other words, in the absence of regulatory requirements for the provision of environmental information, the question has been raised as to why companies voluntarily choose to provide such information (Gisbon & O'Donovan, 2000). Answering such question should be attempted within a pertinent theoretical framework, as any study of an accounting problem cannot be attempted unless it is done within the confinements of a sound theoretical framework (Van Der Merwe, 1996).

There are various theoretical perspectives employed to shed a light the reasons behind the firms social and environmental performance disclosure (Deegan, 2002). Prior studies that tried to expound on corporate environmental disclosure has mostly

depended on a single theoretical framework. As a result, the empirical findings have not been exposed to alternative explanation examination (Cormier *et al.*, 2005). Cormier *et al.* (2005) suggested that environmental disclosure is multi-dimensional and is driven by complementary forces. Gray *et al.* (1995a) argued that CSR (including ER) activity is quite complex and as such, a single theoretical perspective is not sufficient to explain it. Cormier *et al.* (2005) suggested that to enhance understanding of environmental disclosure, it must be viewed via a broader conceptual outlook to enable the reconciliation of different inconsistent empirical findings.

Theoretical perspectives that have been used within the social and environmental disclosure literature are classified by Gray *et al.* (1995a) into three main categories: 1) decision usefulness theory; 2) economic theory; and 3) social and political theories. Social and political theories have become dominant and widespread in the context of social and environmental disclosure studies, as prior researches dedicated to it made use of social and political theories such as the political economy theory, the stakeholder theory and the legitimacy theory (Gray *et al.*, 1995a; Silva, 2008; Yusoff *et al.*, 2006). The legitimacy and stakeholders perspectives were argued to emerge from the political economy theory. The political economy theory explicitly recognizes the power conflict within society, and the various struggles between different groups in society (Deegan, 2002). Stakeholder theory and legitimacy theory have been widely used in accounting literature to explain social and environmental disclosure practices (Khlif *et al.*, 2015).

However, no one of the abovementioned theories is consistent in their support and this shows that each only partially explains the phenomenon (Adams, 2002). This is in line with Al-Tuwaijri's (1998) argument that while each study has relied on a sole theoretical perspective to explain environmental disclosure, no one theory is sufficiently comprehensive to explain all factors affecting a firm's decision to disclose environmental information. Therefore, it was acknowledged that several frameworks rather than one provide more meaningful insight in understanding social and environmental disclosure (Lu and Abeysekera, 2014)

Gray *et al.* (1995a) argued that the essential problem in the literature arises from treating each social and political theory as alternative theories of reporting behavior when stakeholder and legitimacy theories are better considered as two perspectives that overlap on the issue and form a set in a framework of assumptions concerning political economy. They added that the differences, which have been discussed by some studies (e.g. Arnold, 1990; Guthrie & Parker, 1990) are differences in levels of resolution of perception rather than arguments in favor and against competing theories as such.

The only difference between the legitimacy theory and stakeholder theory is that, while stakeholder theory suggests that the firm's actions are according to the separate stakeholder groups' needs and power (Ullman, 1985), legitimacy theory concentrates on the interactions of the firm with the society (Gray *et al.*, 1995a; Yusoff *et al.*, 2006). As corporations are answerable to society and to its stakeholders for their environmental stewardship (Jones, 2003), legitimacy theory considers the legitimacy of the corporation within society as a whole, whereas stakeholder theory considers the subgroups within society (stakeholders) and their relationship with the

corporation (Belal, 2008; Khlif *et al.*, 2015). Thus, corporations attempt to maintain their present status and to operate within a system based on various power relationships with other parties (Gray *et al.*, 1996). While the company power relationship with a particular stakeholder may be explained by stakeholder theory, the company power relationship with society as a whole is better explained by the legitimacy theory.

Thus, in order to assist in determining factors that could influence quality of voluntary environmental disclosure in different mediums (annual reports, stand-alone environmental related reports, and websites) of oil and gas companies in DCs, this study uses triplex theoretical framework, which is derived from political economy theory, stakeholder theory, and legitimacy theory⁸. The three theoretical perspectives are discussed below. Figure 3.1 illustrates the social and political theories of CSR reporting.

3.2.1 Political Economy Theory

Political economy theory (PET) recognizes the power conflict within society (Deegan, 2002). It posits that “accounting systems act as mechanisms used to create, distribute and mystify power” (Buhr, 1998, p. 165). From the political economy theory, environmental disclosure is seen as a “pre-emptive and used to enforce an agenda to stave-off intervention” (Frost, 2000, as cited in Elijido-Ten, 2004, p. 7). Corporations may carry additional costs created by governmental regulatory actions (government intervention). Such costs are called “political costs” (Whittred, Zimmer, & Taylor, 1996). To avoid (or at least reduce) possible political costs, corporations

⁸ These various theoretical perspectives are not necessarily mutually exclusive, but could be considered supplementary to each other (Gray *et al.*, 1995a).

are predicted to provide social and environmental disclosure (Watts & Zimmerman, 1978).

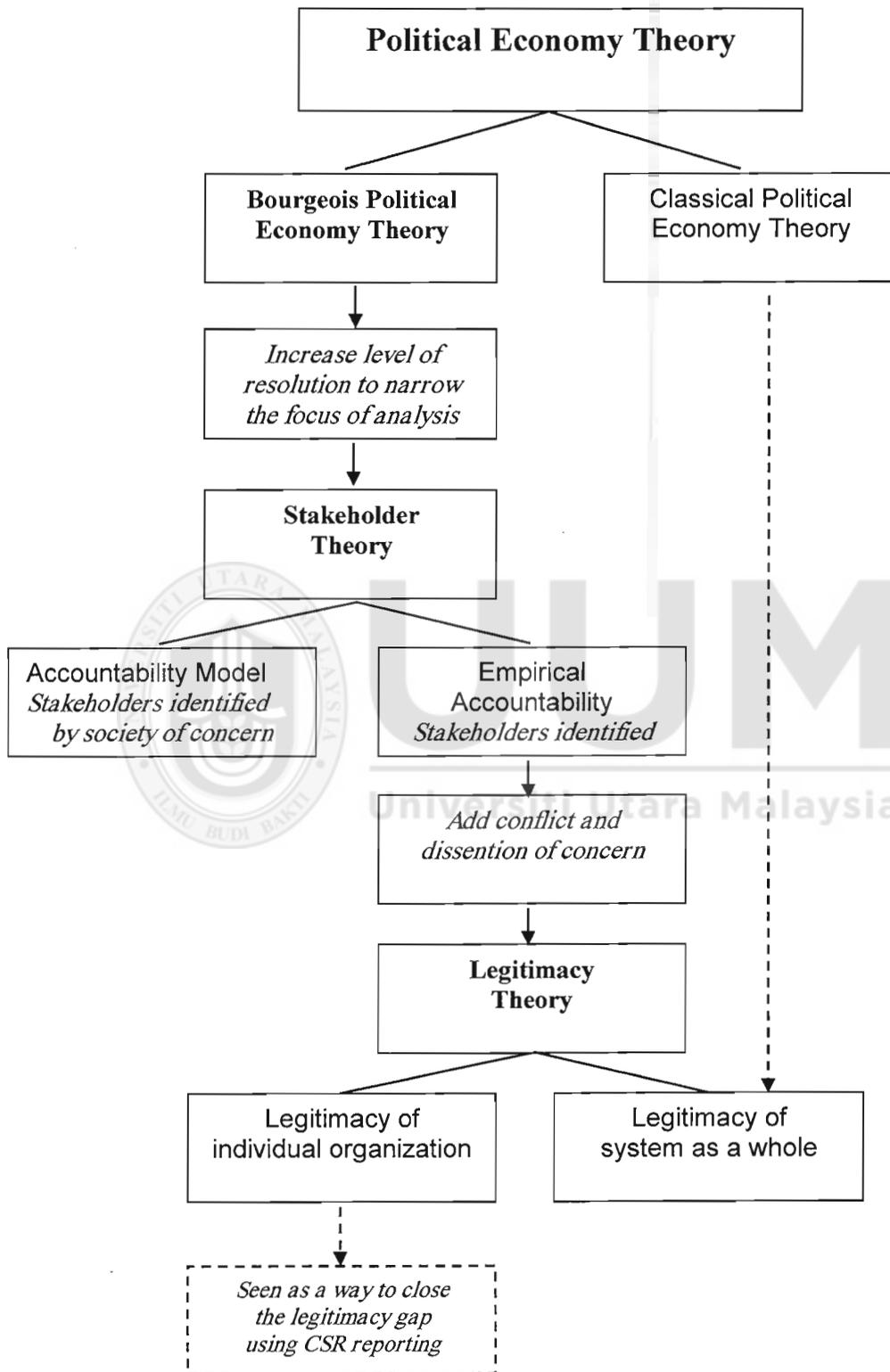


Figure 3.1
Social and Political Theories of CSR Reporting
 Source: Adapted from Silva (2008, p. 12)

Political economy theory is distinct from the dominant approach of focusing on the economic self-interest and wealth-maximization of owners. Instead it focuses on the political, social and institutional framework upon which the economy runs in (Gray *et al.*, 1995b). Political economy theory was said to provide accurate information for firms' response to public pressure for information disclosure regarding their social impact. In addition, the theory posits deems accounting reports as similar to that of social and economic reports (Guthrie and Parker, 1990). More specifically, supporting political economy theory, Williams (1999) argued that corporations voluntarily disclose social and environmental information in response to the pressures of the social, political and economic systems that surround them.

Political economy theory is classified into two streams: 'classical' and 'bourgeois'. According to Gray *et al.* (1996), mandatory reporting is highlighted by the classical political economy approach whereas voluntary reporting is focused on by the bourgeois political economy approach. As this study is concerned with voluntary environmental reporting, the bourgeois approach of political economy theory is employed. Stakeholder and legitimacy theories, which are commonly used in the social and environmental disclosure literature, have been seen as applications of bourgeois political economy perspective (Gray *et al.*, 1995b). Thus, political economy theory and its subset theories (stakeholder theory and legitimacy theory) are used in this study.

3.2.2 Stakeholder Theory

There are two approaches to define stakeholders namely a narrow definition and expanded definition. According to the former approach, a shareholder group refers to

strategic management focuses on managing the financial stakeholders of the company, thus this branch reflects economic perspective, whereas moral-based branch emphasizes the interests of all stakeholders in order to fulfill the broader perspective of satisfying as many stakeholders as possible, regardless of the strength of their economic relationship with the company (Frooman, 1999).

The definition of factors that influence the ongoing existence of the corporation is the objective behind stakeholder theory (Razeed *et al.*, 2004). The stakeholder perspective considers corporations to have a number of different stakeholders. It can therefore be stated that firms are responsible to stakeholders and they depend on their ongoing approval for the maintenance of an optimum operating environment (Roberts, 1992). The theory is deemed to be one of the top conceptual frameworks in social accounting field (Gray *et al.*, 1996). Stakeholder theory asserts that corporations, for continued existence, need support from stakeholders (Gray *et al.*, 1995a). Therefore, a corporation's management is expected to take on activities expected by its identifiable stakeholders (Boesso & Kumar, 2007).

Stakeholders have power to affect or control (indirectly or directly) resources that the corporation needs. Stakeholder power may arise as demand for resources (finance, labor), access to influential media, ability to legislate against the corporation or to impact the goods and services consumption of the firm (Deegan, 2000). The more power the stakeholder holds, the more the firms need to listen and satisfy their needs and demands (Yusoff *et al.*, 2006; Yusoff and Othman, 2013). Continuing or survival of an organization depends on how well it manages its stakeholders (Neu *et al.*, 1998). Thus, stakeholder theory concerns how an organization manages its

stakeholders (Yusoff *et al.*, 2006). Ullman (1985) argued that when stakeholders control resources critical to the corporation, the corporation is likely to respond in a way that satisfies the demands of the stakeholders.

From the perspective of managerial (strategic management) branch of stakeholder theory, disclosure has been used by companies to manage their relationship with different stakeholders, especially those deemed to be powerful and who can impact significantly on the companies (Ullmann, 1985). In respect of stakeholders' demands for information, pressure for disclosure comes from different stakeholders (Peiyuan, 2005). From the perspectives of stakeholders, information disclosure is deemed to be an obligation and a stakeholder right. In order to retain its existence, a corporation needs the support and approval of its stakeholders and as such, the more powerful the stakeholders are, the more the corporation has to adjust their interests and demands to cater to them (Gray *et al.*, 1995a). More specifically, it was suggested that the disclosure of social and environmental information by corporations is mainly directed towards answering the consequences of their decisions to their stakeholders (Darus *et al.*, 2014). Particularly, stakeholders' pressure for business transparency has led companies to develop CSR disclosures (Giannarakis, 2014).

Stakeholder theory suggests that “an organization will respond to the concerns and expectations of powerful stakeholders and some of the response will be in the form of disclosure” (Dibia and Onwuchekwa, 2015, p. 147). Corporations are pressured by their stakeholders to make social and environmental disclosure. Thus, social and environmental disclosure is considered a medium for managing, negotiating or manipulating stakeholders (Roberts, 1992). In other words, disclosure of social and

environmental performance can be deemed to be a part of the corporation-stakeholders dialogue (Gray *et al.*, 1995b), and corporations disclose information on environmental performance in response to demands of their stakeholders (Alias, 2001; Tilt, 1994). Thus, stakeholder theory provides rich insights into the factors that motivate corporations to provide social and environmental disclosure (Dibia and Onwuchekwa, 2015).

As mentioned earlier, awareness towards environmental issues has increased and become a key concern for different stakeholders. Stakeholders are very concerned with environmental issues when making decisions. Thus, environmental information is utilized by different groups of stakeholders to assist their decision making (O'Rourke, 2004; Sen *et al.*, 2011; Suttipun and Stanton, 2012; Villiers and Staden, 2011). It is recognized that disclosure quality has significant influence on the decision quality of the stakeholders (Brink *et al.*, 1997) and effective disclosure should hence facilitate stakeholders' informed decisions that are consistent with their interests (Barr, 2007). For this purpose, stakeholders may utilize their power as stakeholders (particularly when they control resources critical to the firms) to pressure firms to disclose environmental information meet their needs (Roberts, 1992; Ullmann, 1985). It was argued that to meet needs and demands of their stakeholders, companies should disclose more and better quality information on environmental aspects (Gray *et al.*, 1995a; Yusoff *et al.*, 2006; Yusoff and Othman, 2013). Thus, stakeholders may exercise pressures on firms to provide them with environmental information with high degree of quality to enable them to make decisions. In this way the stakeholders influence the quality of environmental disclosure.

However, although influences of different types of stakeholders on firms are evident, but not all stakeholders have the same ability to have influence on firm's decisions. The stakeholders' importance differs from one to another. The more critical the stakeholder resources are to the continued viability and success of the company, the greater power the stakeholder possesses to influence corporate decisions (Ullmann, 1985). The primary stakeholders such as investors, employees, creditors, customers, governments and communities are directly involved in the companies' activities and have direct relevance to the companies' survival, profitability, and growth (Clarkson, 1995; Waters, 2010). Therefore, the primary stakeholders have direct influence on companies' decisions. Thus, by involving stakeholders, they provide information to companies what to report to increase corporate transparency. This involvement should therefore increase the quality of the disclosure (Amran & Ooi, 2014). In contrast, the secondary stakeholders such as media, non-governmental organizations (NGOs), academics, consumer advocacy groups, and environmental lobby groups are only indirectly involved with companies; therefore, the secondary stakeholders indirectly influence companies' decisions (Waters, 2010).

It was argued that a company can be seen as a network of primary stakeholders, which rely on each other, so the primary stakeholder groups have interconnection effects on each other (Clarkson, 1995; Waters, 2010). It was also recognized that the secondary stakeholder groups have the ability to encourage and motivate the roles and influences of the primary stakeholder groups. Thus, secondary stakeholder groups such as NGOs, media may work to impact governments, communities, investors and consumers, all primary groups (Clarkson, 1995; Waters, 2010).

In this study the stakeholder theory is used to explore the factors that influence the content-quality of environmental disclosure. The oil and gas industry is considered the biggest and the most widespread industry in the world. Its activities can carry major environmental impacts. Air pollution, global climate change, and oil spills are examples of environmental threats created by this industry. As a result, oil and gas firms are pressured by stakeholders to disclose their environmental and social performance (Barr, 2007).

3.2.3 Legitimacy Theory

Lindholm (1994, p. 2) defines legitimacy as “a condition or status, which exists when an entity’s value system is congruent with the value system of the larger social system of which the entity is a part. When a disparity, actual or potential, exists between the two value systems, there is a threat to the entity’s legitimacy”. The legitimization process was also defined as “a means of seeking acceptance of the firm’s specific activities and operations” (Frost, 1999, p. 4).

According to Dowling and Pfeffer (1975), organizational legitimacy is when firms attempt at establishing an alignment between the social values related with or implied by their activities and the acceptable behavior in the larger social system to which the activities are related to. Organizational legitimacy is said to be realized when these two value systems are aligned and a threat to such legitimacy exists when an actual or potential disparity occurs between two value systems. Organizations are considered as functioning in a more extensive social context under the systems-oriented viewpoint (Gray *et al.*, 1995a). Hence, an organization is assumed to be

“influenced by, and in turn to have influence upon, the society in which it operates” (Deegan, 2002, p. 292).

The underlying base for legitimacy theory is the existing social contract⁹ between the firm and society that the firm operates in and of whose resources the firm consumes. For successful continuous operation, firms have to act within the societal boundaries of acceptable behavior (O'Donovan, 2002). Within the context of organizational interaction with society, legitimacy theory states that “organizations continually seek to ensure that they operate within the bounds and norms of their respective societies, that is, they attempt to ensure that their activities are perceived by outside parties as being legitimate” (Deegan, 2000, p. 253). However, legitimacy cannot be defined solely within legal requirements (Dowling & Pfeffer, 1975), rather, it should be defined within society's expectations both implicit and explicit (Deegan, 2000).

Based on the study by Shocker and Sethi (1974, p.67), any social institution including business, functions in society through social contract (expressed/implicit) where its development hinges on two factors; delivery of social desirable societal ends in general, and the distribution of economic, social or political advantages of groups from it obtains its power. In the context of a dynamic society, institutional power sources and needs for its services are temporary. Thus, a firm must often satisfy the twin tests of legitimacy and relevance by explaining that society is in need of its services and that the groups that benefit from its rewards are approved by the society. According to Yusoff and Othman (2013), because of the social contracts

⁹ Includes; explicit terms represented by legal requirements and implicit terms of un-codified community expectations (Deegan, 2000).

between the corporations and the society in which they operate, the pressure for the discharge of accountability is raised (Yusoff and Othman, 2013).

The companies increasingly try to show an outstanding image of their positive cooperation in social activities to acquire legitimacy and so they have turned to reporting (Noodezh and Moghimi, 2015). Thus, environmental disclosure plays an important role in promoting corporate image in conjunction with the aims for better social integration (Yusoff and Lehman, 2009). For example, firms use social and environmental information to enhance their legitimacy in the eyes of customers which in turn contribute to the firms' product/service success (Khlif *et al.*, 2015).

On the basis of legitimacy theory, firms attempt to realize an alignment between social values related with or implied by their activities and the acceptable norms in the larger system upon which the activities are related to. The level of congruence between a corporation's activities and society's expectations of that corporation's activities is a direct reflection of its legitimacy (O'Donovan, 2002). If difference exists between the values of the corporation and the values of the community, which is referred to as legitimacy gap, the corporate legitimacy is threatened (Dowling & Pfeffer, 1975; Lindblom, 1994), thus the ability of the firm to continue its processes is influenced (Dowling and Pfeffer, 1975). Gaps in legitimacy may arise in the following instances (Wartick and Mahon, 1994):

- A change in corporate performance occurs but the expectations of corporate performance remains the same;
- Society's expectations of corporate performance have changed but corporate performance remains the same and;

- Both corporate performance and society's expectations change in divergent directions, or in one direction but with changing momentum.

To bridge the gap of legitimacy, it is important for the firm to determine activities within its control and parties that can provide legitimacy to the firm (Neu *et al.*, 1998). Afterwards, the organization may adopt one or more of the following strategies (Lindblom (1994) :

1. Make changes and report to educate and create awareness of the public concerning such changes.
2. The organization reports with attempting to alter the existing social values or perceptions of the organization, but doesn't change its behaviors.
3. The organization provides reports to form perceptions by attracting attention away from issues of concern to others; stressing on positive news and overlooking negative ones.
4. The organization may misrepresent its activities to hide negative news.

Because corporations seek to ensure that their operations are contained within the norms of their societies in a constant manner, they try to guarantee that their activities are always viewed as legitimate (Deegan, 2000). Reporting of environmental information can therefore play an important role in achieving corporate legitimacy (Frost, 1999). To be seen as legitimate, corporations can choose to disclose information on environmental aspects of their activities (Alias, 2001). Neu *et al.* (1998) argued that in the modern era, society is extensively developed by magazines, newspapers, annual reports and official publications. They also added that because most organizational activities cannot be observed, the public comes to

depend on words and figures (annual reports and financial statements) as these activities proxies. Thus, firms also make use of information contained in annual reports to communicate their legitimacy and their management of public impressions.

Several studies (Dowling and Pfeffer, 1975; and Guthrie and Parker, 1989) stated that based on the legitimacy theory, disclosure practices reflect the many socially desired activities which could gain the firm public legitimacy. According to Schaltegger *et al.* (2008), early developers of the concept of legitimacy theory were Shoker and Sethi (1974), and Preston and Post (1975). Thereafter, legitimacy theory has been widely used by the literature of social and environmental disclosure (e.g., Brown & Deegan, 1998; Cho, 2007; Deegan, 2002; Guthrie & Parker, 1989; Lindblom, 1994; Neu *et al.*, 1998; O'Donovan, 2002; Patten, 1992; Patten & Crampton, 2004; Tilt 1994; Wilmshurst & Frost, 2000). Most previous studies concerned with motivations of companies to disclose environmental information indicated that legitimacy theory is one of the more probable explanations for the increase in environmental disclosure (Deegan, 2002; O'Donovan, 2002).

Several earlier studies revealed that firms operating in environmentally sensitive industries disclose environmental information for the legitimization of their societal existence (e.g. Deegan and Gordon, 1996; Deegan and Rankin, 1996; Deegan *et al.*, 2002; Neu *et al.*, 1998; Patten, 1992). Kuo and Chen (2013) indicated that firms from environmentally-sensitive industries can significantly improve their perceived legitimacy by releasing CSR information.

According to the legitimacy derived expectations, it is likely that a major environmental crisis in a company will impact not only the legitimacy of this specific company, but the legitimacy of the other companies operating in the same industry (Summerhays and De Villiers, 2012). Therefore, management may achieve legitimacy for not only specific activities and the entity as a whole, but indirectly for the industry in which they operate (Frost, 1999). For example, the Gulf of Mexico oil spill was an environmental crisis that not only impacted the BP image and legitimacy, but also impacted on the image and legitimacy of other oil companies (Summerhays and De Villiers, 2012).

Because of the effects the oil and gas industry has on the environment and the society, reputations of companies operating in this industry have been increasingly challenged (Paes, 2012). As a result, the social and environmental disclosure occupies an important role, as such disclosure is useful to generate and increase corporate reputation (Perez, 2015; Yin, 2012), and a mechanism used to improve image and maintain the legitimacy of the organization (Sumit, 2004).

Thus, from legitimacy perspective, oil and gas firms are greatly concerned by the legitimization of their activities via environmental disclosure as they are quite evident and extensive. So, it is believed that legitimacy theory is fit to explain environmental disclosure in oil and gas industry.

3.3 Research Theoretical Framework

This study proposes a theoretical framework based on past literature on factors of environmental disclosure (as discussed in Chapter 2). Expected linkages between independent and dependent variables are presented in Figure 3.2.

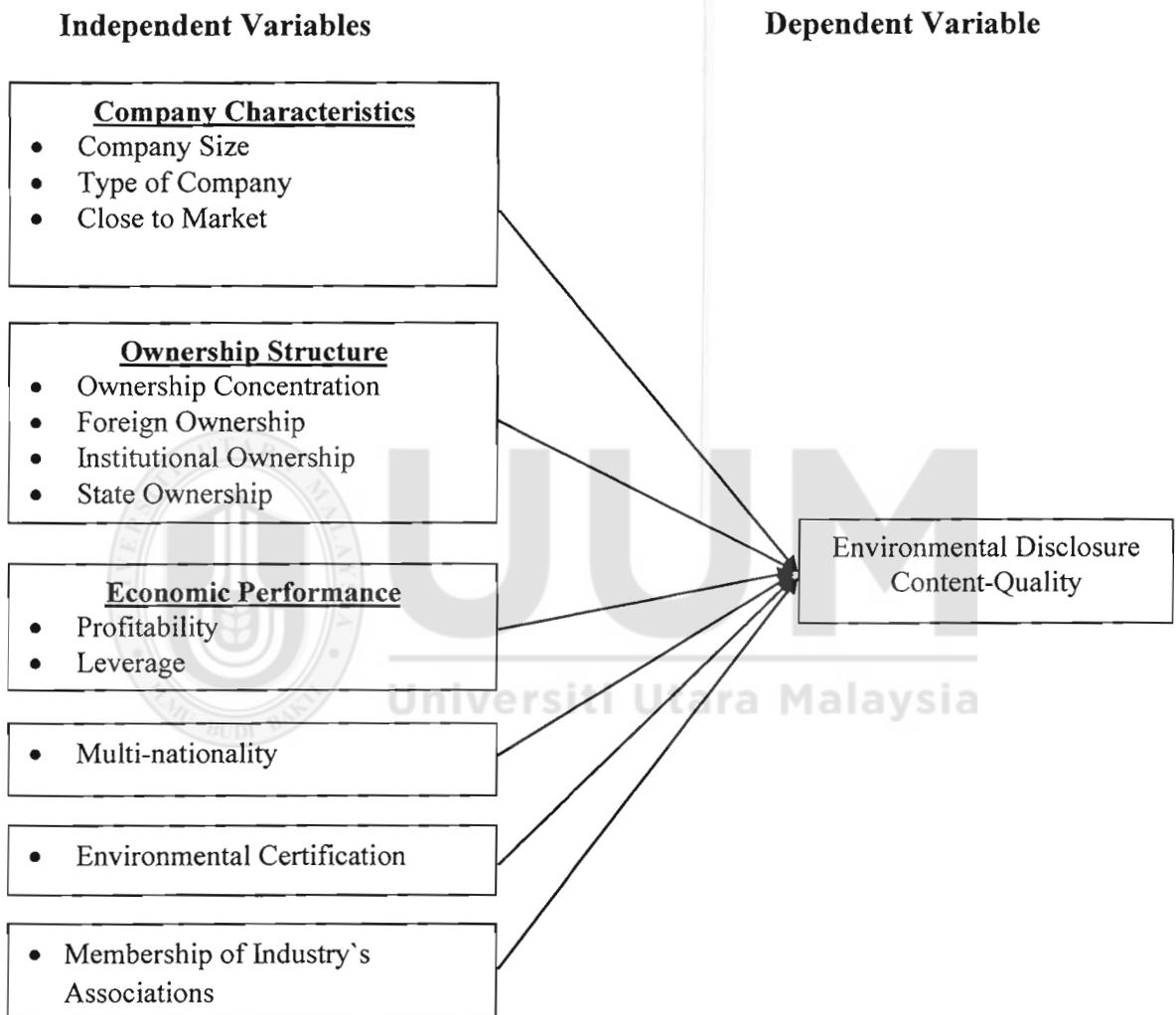


Figure 3.2:
Research Framework

The focal point of this framework is the environmental disclosure content-quality. Contrary to the most available literature that only focuses on sole medium of environmental disclosure (mostly annual report), the current study covers three vehicles of environmental disclosure, particularly, annual reports, stand-alone reports and corporate homepages. Thus, the dependent variable of the framework represents quality of environmental disclosure in annual reports, stand-alone reports and corporate homepages.

As this study aims to determine factors influencing the level of environmental disclosure content-quality of oil and gas companies in developing countries, the study offers a framework to explain corporate environmental disclosure in terms of determinants. The framework has built based on political economy, stakeholder, and legitimacy theories and pertinent prior literature. These theories have been seen as appropriate theoretical background for social and environmental disclosures (Gray *et al.*, 1995a; Khlif *et al.*, 2015; Silva, 2008; Yusoff *et al.*, 2006).

The main idea in this theoretical framework is that corporate environmental disclosure is a function of political and social pressures imposed by various stakeholders to companies concerning their environmental performance. Thus, companies voluntarily provide environmental information in response to the pressures of the social, political and economic systems that surround them (Cho and Kim, 2007; Hassan, 2010; Williams, 1999).

However, in addition to some common factors have been proposed by the literature, the framework includes some factors that have not received sufficient attention in

previous studies, such as close to market, institutional ownership, state ownership, multi-nationality and environmental certification. The study also extends the framework of environmental disclosure through presenting two new variables to environmental disclosure literature: type of company, and membership of industry associations.

3.4 Hypotheses Development

This section describes the specific hypotheses developed for this study. It covers all the explanatory factors and their linkage to the dependent variable as illustrated in Figure 3.2.

3.4.1 Environmental Disclosure Content-quality in Different Media

The stakeholders' decisions may be influenced by reporting quality in a significant way (Brink *et al.*, 1997) and accordingly, such reporting should allow stakeholders to carry out informed decisions based on their interests (Barr, 2007). It was proved that different companies use different disclosure mediums to communicate their environmental information (e.g. Jenkins & Yakovlenna, 2006; Razeed *et al.*, 2004), and different environmental reporting vehicles send different messages (cf. Buhr, 1994; Zeghal & Ahmed, 1990). So, it can be argued that a better source of information is a medium of higher quality.

It was argued that information concerning location was important in explaining the relative significance of the disclosure, and the disclosure location shed a light on the importance placed by the firm on its disclosure option (Manasseh, 2004; Unerman, 1996). In the financial statement, the voluntary format differs from the mandatory

one and when the financial report areas are not covered by the required statutory format, the disclosure location choice is left to the company's decision.

According to Mitchell *et al.* (2006), while audited information is viewed more credibly, non-audited sections are likely to contain more environmental information. In the absence of mandatory requirements, and because disclosure in audited sections requires additional cost of ensuring compliance with the laws and regulations, companies would rather that their environmental disclosure be non-audited and they are willing to provide more environmental disclosures in those sections (Mitchell, *et al.*, 2006).

Similarly, across disclosure vehicles, among environmental disclosure mediums, only annual report is required to be audited. So, it is expected that companies would rather have their environmental disclosure not to be audited and be willing to provide more environmental disclosures in non-audited reports, including environmental report, social report, sustainability report, and corporate website. Other disclosure instruments are reported to be used by companies in which case, only minimal level of corporate social reporting is found in annual reports (Unerman, 2000).

Very few previous studies have compared the environmental disclosures made in various reporting mediums. The previous studies concerned with different subjects, such as medium used by companies (e.g. Jenkins and Yakovlenva, 2006; KPMG, 1999; Mak *et al.*, 2007; Peiyuan, 2005; Razeed, *et al.*, 2004), how much is disclosed or extent/ quantity of disclosure (e.g. Branco and Rodrigues, 2008; Buhr and Freedman, 2001; Chatterjee and Mir, 2006; Cormier and Magnan, 2004; De Villiers

and Van Staden, 2011b; Islam and Islam, 2011; Sobbani *et al.*, 2012; Suttipun and Stanton, 2012; Williams and Pei (1999; Yusoff and Lehman, 2008; Yusoff and Othman, 2013), what is disclosed (type) and format of information disclosure (e.g. Zeghal and Ahmed, 1990) or based on several dimensions, such as quantity, subject matters, type of information, and tense used (e.g. Buhr, 1994). However, these studies revealed mixed results. Some studies indicated differences between different mediums, while, some other studies found no differences.

In terms of using of different reporting mediums, prior research showed variety between companies in using different disclosure media to communicate their environmental and social information. For example, KPMG (1999) survey showed that almost three fourth of the number of companies provide their environmental information in their annual report and one fourth of the companies provide them in separate environmental reports. Razeed, *et al.* (2004) indicated that majority of US resource companies primarily used annual reports (both hard copy and internet-based) to disclose their environmental information, but failed to exploit the power of other media.

Results of a survey conducted by Peiyuan (2005) revealed that environmental reporting of Chinese firms are characterized as ill-regulated when it comes to the content and format of their environmental reports – some companies provide the information in their annual reports, others on their websites and some others by other means such as environmental reports and newspapers and magazines. Particularly, Peiyuan (2005) indicated that of 54 companies, 8 (14.8%) companies disclosed environmental information in environmental reports, 16 (29.6%) companies in

environmental brochure, 36 (66.7%) companies disclosed in corporate brochure, 15 (27.8%) in financial statement, 25 (46.3%) on website, 19 (35.2%) in receive tours to factory, 5 (9.3%) in meeting with residents, 11 (20.4%) on television or radio, 14 (25.9%) in newspaper or magazine, 10 (18.5%) at seminars or symposium, and 3 (5.6%) through other media. Thus, the study revealed no uniform format of environmental reporting among Chinese companies.

Jenkins and Yakovlenva (2006) examined social disclosure among the leading 10 global mining firms and the study showed that in 2003 alone, out of the ten firms that produced annual reports, seven produced a stand-alone social and environmental report, and one produced a specific volume of social and environmental report and made it a part of the annual report. Moreover, all ten companies published information on their social and environmental issues on their websites in 2004.

With the aim of identifying the status and progress of environmental reporting, Mak *et al.* (2007) examined the environmental reports of a sample of airlines in Europe and the Asia Pacific region. The study revealed that only airlines in 12 countries have published stand-alone environmental reports. The study showed that European and Asian airlines have devoted varying degrees of effort and resources to producing stand-alone environmental reports, and the reports produced by European airlines were richer in content than those of their counterparts in Asia.

Zeghal and Ahmed (1990) compared between three mediums used by corporations to disclose social information, namely, annual report, brochures and advertisements (radio, television, and newspapers) in regards to their type and format of information

disclosure. The study indicated that in terms of the number of words, brochures play the most important role in the social information disclosure. They are followed by the annual reports, whereas advertisements play a very minor role in the total social information disclosure. Buhr (1994) indicated difference between annual reports and environmental reports with regard to quantity, subject matters, type of information, and tense used.

In a related study, Healy and Palepu (2000) contended that the disclosure levels hinges on the needs of the target users and the disclosure medium utilized, whereas Buhr and Freedman (2001) demonstrated that various firms that generate environmental reports are shifting much of their voluntary environmental performance information from their annual reports to their environmental reports to prevent information duplication. The study also concluded that Canadian firms produced a greater level of voluntary environmental disclosure, especially in the environmental report, while the US firms produced more of the mandated disclosure in the 10 K and annual report.

Chatterjee and Mir (2006) revealed that Indian firms provide more information on their environmental aspects on websites than in annual reports. Branco and Rodrigues (2008) stated that environmental information is more disclosed in annual reports than on the internet. Thus, the study concluded that companies prefer the annual report as a CSR medium. Yusoff and Lehman (2008) indicated that companies disclosed more environmental information in stand-alone reports and corporate websites compared to disclosure made in annual report.

De Villiers and Van Staden (2011b) compared environmental disclosures on websites and in annual reports of 120 North American companies. They found that there were different levels of environmental disclosures in annual reports and on websites. Similarly, Sobhani *et al.* (2012) investigated the sustainability disclosure of Bangladeshi banks in their annual reports and corporate websites. They revealed that disclosure is taking place more in annual reports than on web sites. Yusoff and Othman (2013) indicated that most of items disclosed in stand-alone reports (environmental reports, social and sustainability reports), corporate websites, and corporate newsletters showed higher mean average when compared to disclosures made in annual report. Thus, the study concluded that other reports are more favourable than annual reports in disclosing environmental information.

On the contrary, some previous studies found no differences between different mediums. For example, Cormier and Magnan (2004) found no significant variation between different disclosure media, as they found an extensive overlap of print disclosure and website disclosure. Suttipun and Stanton (2012) investigated the environmental disclosure in annual reports and websites. The study indicated that there is no difference between annual reports and websites regarding amount of environmental disclosure.

However, some other studies showed mixed results. For example, Buhr (1994) indicated mixed results, as the study showed that there is a difference between annual reports and environmental reports with regard to quantity, subject matters, type of information, and tense used. While the study found no difference in the quantity of environmental disclosure provided through annual reports and SOC filing mandated

by Securities regulations, there were few differences found between the natures of the environmental disclosure provided through the two media. The results on possible differences in information type included in the two media were not conclusive. In addition, the study revealed that there are no differences between SOC filling and annual reports with regard to the use of subject matter. Thus, the study found differences between some media, but found no difference between other media.

Tilt (1994) investigated pressure groups' perceptions (sufficiency, ease of understanding and credibility) of CSD in various media (annual report, supplements to the annual report or generated at interim dates, booklets or leaflets addressing the company's social activities, advertisements and product labels). The study indicated that there is strong agreement that the amount of corporate social responsibility disclosure is insufficient. The study also indicated that, the most commonly used medium for social responsibility disclosure are the annual reports. While, the most commonly received form of social disclosure are advertisements followed by annual reports. In terms of understandability, the study revealed that advertisements are considered as the easiest form of the social disclosure to understand, followed by supplements, while annual reports scored a median rank for understanding. In terms of credibility, the study revealed that annual reports scored a median, while advertisements and supplements were seen to be low in credibility.

Another example is a study of Williams and Pei (1999), which investigated corporate social disclosures in annual reports and corporate websites of companies from Australia, Singapore, Malaysia, and Hong Kong. The results revealed that Australian

and Singaporean companies disclosed more CSR information on their websites than in annual reports, while, for companies belong to Malaysia and Hong Kong there were no significant differences between the two mediums. However, the study showed that companies in all countries appeared to provide more narrative information on their websites than annual reports.

Islam and Islam (2011) examined the environmental disclosure in annual reports, press releases and stand-alone social responsibility reports of a multinational oil and gas company operating in Bangladesh (Niko company) over the period 2004-2007. They have found that the company annual reports and press releases adequately disclosed its environmental contingent liability, but they did not provide any information regarding the issue of the local community who were affected by the blowouts, instead the company utilized a stand-alone report to address this issue.

Thus, most previous studies argued for and indicated variation of environmental disclosure among different disclosure mediums. Therefore, it is expected that, environmental disclosure quality varies from medium to medium. Hence, the first hypothesis is:

H1: There is a significant difference between several disclosure mediums with regard to their environmental disclosure content-quality in oil and gas companies in developing countries.

3.4.2 Factors Influencing Content-quality of Environmental Disclosure

Based on theoretical perspectives and pertinent literature, the following paragraphs discuss a number of selected factors that may affect environmental disclosure content-quality.

3.4.2.1 Company Characteristics

Firm characteristics are one of the common factors that have been examined within different contexts. In disclosure context, many previous studies have investigated the association between several dimensions of disclosure and different company characteristics. According to Gray *et al.* (2001), notwithstanding the fact that the existence of putative relationships between disclosure and corporate characteristics, these relationships have yet to be demonstrated to exist consistently across different countries. So, investigating relationships between disclosure and characteristics of firms belonging to different countries will give clear evidence on whether these relationships exist across different countries.

This study is concerned with a specific type of disclosure that is environmental disclosure. Results of prior studies showed a multitude of factors affecting environmental disclosure practices. Company related characteristics were of the common factors examined in most previous studies. However, most of previous studies have investigated the association between environmental disclosure practices and different company characteristics focused on environmental disclosure quantity or its extent, whereas studies focusing on environmental disclosure quality were very few. Therefore, this study concentrates on a particular aspect of environmental disclosure i.e. content-quality of ED, which is given less attention in prior research.

Furthermore, in addition to the general company characteristic, that has been extensively examined in prior literature, this study covers other company characteristics namely close to market (trail sales or brand), which have been given less attention in prior literature. In addition, this study covers a company characteristic of an oil and gas company or industry-specific firm characteristic, namely, type of company (independent or constrain company), which have never been examined in relation to environmental disclosure.

3.4.2.1.1 Company Size

Firm size and visibility are commonly proposed as firm-level factors of environmental disclosure (Cormier & Magnan, 2003; Patten, 2002a, 2002b). Several studies revealed a positive relationship between firm size and disclosure, either in general or particular type of disclosure such as social and environmental disclosures. While this relation has been well recognized in prior research, there is no agreement on theoretical reasons for this relationship. Different theoretical based arguments are reviewed below.

Zarzeski (1996) contended that the positive disclosure-firm size relationship may owe itself to the public demand for information and their high dependence on international source. Some other researchers (Brown and Deegan, 1998; Patten, 2002a) believe that large firms have greater visibility and are therefore subject to greater external pressure. In their response to this pressure, firms disclose environmental information to present their legitimate actions that are aligned with good corporate citizenship.

primary stakeholder groups, a company does not directly depend upon secondary stakeholder groups for its ongoing survival. Nonfinancial groups such as media, academics, consumer advocacy groups, and environmental lobby groups are commonly classified as secondary stakeholders (Clarkson, 1995; Eesley and Lenox, 2006; Elijido-Ten, 2004). The secondary stakeholders have little or no direct power upon the company.

According to the stakeholder theory, a company earns its right to exist based on the relationship with all relevant stakeholders and each of stakeholder groups has the potential to influence the existence and the success of the company. Stakeholder approach proposes that the company needs to consider the interests of all stakeholders affect or affected by the firm including both primary and secondary stakeholders (Mellahi and Wood, 2003). Indeed companies cannot equally respond to the expectations of all stakeholders. Not all stakeholders have the same ability to have influence on a company. The influence of a stakeholder depends on the degree of control a stakeholder has over the resources required by the company (Ullman, 1985). A stakeholder has the ability to influence the resources required by the company also has more influence on the company. Therefore companies are more likely to respond to those stakeholders who are considered to have the most influence the company and thus are most powerful. If the resource is critical to the survival of the company, the sooner and better stakeholder's expectations and demands are being better addressed (Deegan, 2000).

There are two main branches of stakeholder classification, they are; strategic management and moral-based (Harrison and Freeman, 1999; Frooman, 1999). The

the sole or major stakeholder – a definition taken from Friedman’s (1962) claim that the firm’s primary objective is wealth maximization. The latter approach, suggested by Freeman (1983), expands the definition of stakeholders to include broader constituents including interest groups and regulators (Roberts, 1992). Based on the expanded definition approach, stakeholder is defined as "any group or individual who can affect or is affected by the achievement of the organization’s objectives" (Freeman, 1983, p. 46). More specifically, Clarkson (1995) defined stakeholders as “persons or groups that have or claim ownership, rights or interests in a corporation and its activities, past, present or future” (p. 106). Carroll (1999) has defined stakeholders as any individual or group who can affect or is affected by the actions, decisions, policies, practices, or goal of the organization. Similarly, stakeholders of a company were defined as any individual or group who is impacted by or can influence its operations (Fragouli and Danyi, 2015).

Based on Freeman’s definition, the potential stakeholders may be divided into two different stakeholder groups that can, in varying degrees, influence or affect the existence of the company. They are primary and secondary stakeholder groups (Clarkson, 1995). The primary stakeholder group is “those without whose continuing participation the corporation cannot survive as a going concern” (Clarkson, 1995, p. 106). The primary stakeholders group includes; shareholders, creditors, employees and customers, suppliers, government and regulator, and public in general. These stakeholders are important and necessary for a company to survive within society. The secondary stakeholder group is “those who influence or affect, or are influenced or affected by, the corporation, but they are not engaged in transactions with the corporation and are not essential for its survival” (Clarkson, 1995, p. 107). Unlike the

Legitimacy theory explains the pressures that a company has to face when its visibility is heightened for instance due to size. The larger a company becomes, the more affects are imposed against it by the surrounding society and fore most government (Roitto, 2013). Thus, legitimacy theory argues that larger corporations are more open to social monitoring visibility (Adams *et al.*, 1998; Patten, 1992). Legitimacy theory views environmental reporting as a tool in the management of relations with society (De Villiers and Van Staden, 2006; He and Loftus (2014). It is argued that large firms often stress on their corporate image through environmental disclosure in order to develop and maintain their reputation and social position (Ying, 2006).

From stakeholder theory perspective, it is pertinent for larger firms to disclose considerable information as they are in need of obtaining capital from financial markets (Adams *et al.*, 1998; Patten, 1992). Roberts (1992) posited that larger firms have a higher tendency to report because of their vulnerability to media visibility and because of their need to control the perceptions of external stakeholders. They are highly visible to external groups, they are more susceptible to scrutiny from stakeholder groups, and they have more diversification throughout geographical and product markets, and hence possess greater and highly diverse groups of stakeholders (Brammer & Pavelin, 2004). Stated differently, larger firms possess more number of investors and other financial stakeholders characterized as diverse and curious for more information (Cormier *et al.*, 2005).

Another motivation for a large company to be more environmentally proactive is resources availability (Benito and Benito, 2006). Ali *et al.* (2007) argued investment

in disclosure and provision of superior quality disclosure is likely to be taken on by large firms. In addition, consisting with political economy perspectives, and based on the assumption that the level of political costs depends on size, Watts and Zimmerman (1978, and 1990) claimed that political costs of large companies are higher than those of smaller companies, so in attempting to improve confidence and reduce political costs, larger companies are more likely to show higher levels of disclosure. While, Archambault and Archambault (2003) claimed firms that are large in size report greater information to minimize political pressure or that they possess more resources to generate greater information. Lopes and Rodrigues (2007) stated that bigger sized firms often have state of the art information systems and thus, the required high disclosure will cost less to them compared to their smaller counterparts.

Numerous prior studies revealed a positive relation between company size and disclosure in general and social and environmental disclosure in particular. In the general context of disclosure, Wallace *et al.* (1994), Meek *et al.* (1995) and Zarzeski (1996) indicated a positive association between company size and disclosure. Lopes and Rodrigues (2007) demonstrated that bigger companies possess more effective information systems and hence, higher disclosure is not as costly to them compared to smaller companies.

In the context of social and environmental disclosure, Patten (1991) indicated that more social information is disclosed by large companies compared to their smaller counterparts. Gray *et al.* (1995a) who concluded that company size does appear to be related to corporate social and environmental disclosures. Deegan and Gordon (1996)

revealed a positive correlation between environmental disclosure and company size. Deegan & Rankin (1996) indicated that larger companies are disclosing more environmental information compared to their smaller counterparts. Hackston and Milne (1996) found a positive association between size and the CSR disclosure. Adams *et al.* (1998) indicated that a positive relationship between firm size and CSR disclosure. Neu *et al.* (1998) revealed a positive association between the extent of environmental disclosure and company size. Zain (1999) indicated that firm size was a major factor of social disclosure, and Cormier and Magnan (1999) revealed that large companies disclose more environmental information.

De Villiers and Barnard (2000) revealed that larger companies have a greater tendency to report environmental information than smaller companies. Purushothaman *et al.* (2000) indicated more social information is disclosed by large companies compared to their smaller counterparts. Gray *et al.* (2001) revealed that there is a positive relationship between corporate social and environmental disclosure and firm size. Adams (2002) indicated that more social and environmental information is disclosed by large companies compared to their smaller counterparts

This contention is supported also by several studies. For example, Hamid (2004) proved that size has significant influence on CSR disclosure, and Haniffa and Cooke (2005) proved that size was significantly related to CSRD. Brammer and Pavelin (2006) found a positive relation between firm size and quality of environmental disclosure. Ying (2006) revealed that large companies disclose more environmental information. Similarly, Branco and Rodrigues (2008) found company size is positively related to both CSR disclosures on the websites and in annual reports.

Reverte (2009) indicated that corporate size is significantly associated with corporate social responsibility disclosure, and Tagesson *et al.* (2009) indicated that company size is positively associated with the extent of social and environmental disclosure. Pahuja (2009) provided strong evidence in support of the influence of size on environmental disclosure practices of Indian manufacturing companies. Said *et al.* (2009) observed that the firm size did have significant and positive relationship with CSR disclosure, and Zhang *et al.* (2009) indicated that larger companies are more likely to disclose environmental information.

Hassan (2010) found that the firm size is positively associated with the quantity and quality of corporate social disclosure. Abd Rahman *et al.* (2011) found company size to be positively significant associated with the total CSR disclosure. Suttipun and Stanton (2011) indicated that there was a relationship between the amount of environmental disclosure and the size of the company, and Setyorini and Ishak (2012) found that firm size was positively related to the level of social and environmental disclosure. Oba and Fodio (2012a) indicated that firm size has a positive impact on quality of environmental reporting.

Recent studies also proved such positive relation. For example Bowrin (2013) indicated that the amount of social and environmental disclosure is positively related to firm size. Ghomi and Leung (2013) found a significant positive relationship between firm size and the level of GHG disclosure in annual reports. Choi *et al.* (2013) concluded that firm size acts as key factor in determining the extent of voluntary carbon reporting. Haji (2013) found company size to be significant in determining the quality of CSR disclosures.

Chithambo and Tauringana (2014) indicated that company size is significantly associated with GHG disclosure. Giannarakis (2014) indicated significant positive association between firm size and the level of CSR disclosure. Lu and Abeysekera (2014) indicated that firm size has significant and positive association with social and environmental disclosure. He and Loftus (2014) indicated that the firm size was found to be positively associated with the extent of environmental disclosure. Muttakin and Khan (2014) showed that CSR disclosure is positively significant with firm size, and Sulaiman *et al.* (2014) revealed a significant positive association between firm size and the quality of environmental disclosure. Joseph *et al.* (2014) revealed that size is a significant predictor of the extent of sustainability reporting on websites. Kansal *et al.* (2014) revealed that corporate size determines CSR in a positive manner.

More recently, Das *et al.* (2015) showed that CSR disclosure is positively significant with firm size. Esa *et al.* (2015) revealed that company size is significantly and positively associated with the level of CSR disclosure. Dong *et al.* (2015) revealed that, larger firms tend to have higher quality CSR disclosures, and Nurhayati *et al.* (2015) revealed that firm size is a statistically significant factor in explaining the variation of social and environmental disclosure.

In the context of oil and gas, small, upstream-only (exploration and production) companies do not disclose environmental information as the larger, integrated companies. Because of their size and their lack of a retail brand, small E&P companies are out of the public eye, which in turn makes them face lesser pressures to report compared to their larger, integrated counterparts (Sustainability & UNEP,

1999). Alciatore and Dee (2006) examined environmental disclosure practices of a sample of US oil and gas companies, revealed positive significant relation between firm size and environmental disclosure. Singh, Van der Zahn (2007) study showed that firm size determines the level of social and environmental disclosure practices in the context of oil and gas firms. Recent studies conducted in oil and gas industry also supported this positive relationship between the two variables. For example, Al-Drugi and Abdo (2012) revealed that company size has a positive relationship with the level of environmental disclosure. Dibia and Onwuchekwa (2015) revealed that there is a significant and positive relationship between firm size and corporate environmental disclosure in oil and gas companies of Nigeria.

However, although the consensus supports for the association (always positive in nature) between firm size and disclosure, there are a few studies which have broken the consistency of the previous studies results. For example, Halme and Huse (1997) revealed mixed results, as the study indicated that there is no significant relationship between environmental disclosure and firm size, as they noted that although larger firms tended to disclose more information than smaller ones, the quality was no better. Buhr and Freedman (2001) found no significant relationship between environmental disclosure and firm size. While, Tantish (2003) showed that firm size is weakly related with the level of social and environmental disclosure.

Bayoud *et al.* (2012) showed mixed results, as the quantitative findings revealed that level of CSRD does not seem to be affected by company size in Libyan companies while the qualitative findings indicated a positive relationship between two variables. Darus *et al.* (2014) found no significant relationship between extent of CSR reporting

and corporate size. Soheilyfar *et al.* (2014) revealed that the relationship between firm size and disclosure quality is not significant.

Thus, majority of previous studies indicate a positive association between firm size and environmental disclosure. Based on theoretical perspectives and results of previous empirical studies, a positive relationship between firm size and environmental disclosure quality is hypothesized.

H2: There is a positive relationship between company size and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.1.2 Type of Company

Of primary interest of this study are oil and gas company attributes, including type of company. Thus, among others, this study tries to answer the question: Is one type of company more likely to report than another? Precisely, this study aims to provide the answer to the question: Is there any relationship between type of company (individual/ independent or project based/consortia) and environmental disclosure quality of oil and gas companies in developing countries?

Oil and gas industry is a multi-stages industry involving different complex operations including; pre-license prospecting, mineral interest acquisition or contracting, exploration, evaluation and appraisal, development, production and closure (cumulatively called upstream operations), and, transportation, refining and marketing (cumulatively called downstream operations). This industry is characterized by some features such as, high level of uncertainty and risk¹⁰, high

¹⁰There are several sources of uncertainty such as; geologic uncertainty, production uncertainty, price uncertainty, cost uncertainty, investments uncertainty, technological uncertainty, strategic uncertainty (Kaiser and Pulsipher, 2004). It is difficult to determine in advance the existence,

costs, and high level of technology (Baik, 2001; Bindemann, 1999; Kaiser and Pulsipher, 2004). Due to these characteristics, the rights to explore, develop and produce oil and gas are granted to companies that have financing capacity, technology, and experiences required for operations. While these rights can be granted to a single company, usually the minerals rights owners grant petroleum licenses to consortia (called also, consortium or joint ventures) of enterprises (Wright and Gallun, 2005).

A joint venture is a contractual business undertaking between two or more parties, or is an enterprise entered into by two or more parties for a limited purpose. Joint ventures represent a great way to pool capital and expertise and reduce the exposure of risk to all involved (Wright and Gallun, 2005).

In the case where rights are granted to joint-venture/ consortium of companies, a separate entity may be established to carry on operations on behalf of all companies involved in the consortium (OIAC, 2001), whereas in some cases, no separate entity is established; instead, operations are carried out by one of the participating companies. Thus, the present study distinguishes between two states; minerals rights acquired by an independent single company or by different companies but operated by one elected company under its name (referred to as independent company), and mineral rights acquired by different companies and operated by a separate entity (company) established especially for carrying on operations on behalf of different companies constituting consortium enterprise (consortia or consortium company).

extent and quality of hydrocarbon resources, as well as production costs and the future price in the world market (Bindemann, 1999).

However, it was argued that in case of project-based (consortia) company, there is often no one corporate name attached, at least in the minds of the public. So pressure for reporting is non-existent (Sustainability & UNEP, 1999). In addition, joint-venture companies are not reliant on capital market to finance their investments; instead they are financed by their working interest's owners, i.e. companies comprising the consortium enterprise (Wright and Gallun, 2005). Based on this argument, the following hypothesis is presented:

H3: There is a positive relationship between type of oil and gas company (individual/independent or project-based/joint-venture) and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.1.3 Close to Market

Previous studies (for example, Adams *et al.*, 1998; Patten, 1991) indicated that companies affiliated to industries with high public visibility, disclose more social responsibility information than their counterparts. According to Branco and Rodrigues (2008), there are two reasons (which are drawn from social exposure perspective) behind suspecting existing association between industry affiliation and certain categories of social responsibility disclosure (environmental disclosure). They are; environmental sensitivity where an industry has potential environmental impact, and exposure to public visibility (for example, where company deals with final consumers).

Prior studies made use of two proxies for social exposure related to industry affiliation as companies publicly and visibly face high social exposure. They are environmental sensitivity (cf. Patten, 2002b), and consumer proximity (cf. Clarke & Gibson-Sweet, 1999). From environmental sensitivity perspective, petroleum

industry is seen as environmental sensitive industry, regardless of the different degrees and types of environmental effects associated with different activities.

Environmental sensitivity has been given great attention in literature. Many previous studies compared between environmental disclosure of companies affiliated to environmental sensitivity industries and those affiliated to non-sensitivity industries (e.g. Alnajjar, 2000; Banerjee, 2002; Branco & Rodrigues, 2008; Deegan & Gordon, 1996; Frost & Wilmshurst, 2000; Patten, 2002b; Patten, 1991). But consumer proximity has received less attention. In addition, companies affiliating to the same industry (such as oil and gas companies) are considered to have the same degree of environmental sensitivity.

Legitimacy theory asserts that close to market is a reason for a company to be more visible to the community. From consumer proximity's point of view, Branco and Rodrigues (2008) argued that "the nearer a company is to the individual consumer, the more probable is its name to be known to most members of the general public, and hence, the greater will be its social visibility" (p. 689). Thus, firms use social and environmental information to enhance their legitimacy in the eyes of customers which in turn contribute to the firms' product/service success (Khlif *et al.*, 2015).

From stakeholder perspectives, it can be argued that, consumer groups are considered as secondary stakeholders for a company (Sustainability & UNEP, 1999), so a company has finished products (retail sales), its name will be well known to the final consumers. In this case the company faces additional pressure from consumers

groups as a secondary stakeholder group. Thus the company will be more inclined to provide environmental information (Benito and Benito, 2006).

Some previous studies indicated that companies with Retail Operation (RET) or Brand Name (BN) are more likely to report on their environmental aspects. For example, Stanwick and Stanwick (1999) revealed that consumer products firms had the highest level of average disclosures pertaining to environmental certification, environmental reporting, environmental strategies, and environmental measurements. Similarly, Sustainability & UNEP (1999) predicted that companies without retail brand are not highly visible to the public, which in turn makes them face lesser pressures to disclose information. This because companies that have finished products, their names will be well known to the final consumers and to the public in general, therefore, these companies face more public pressure, which in turn drives them to disclose more environmental information.

Jablonowski (2002) concluded that companies with brand names are more likely to report on Health, Safety and Environment (HS&E). Also, Haddock (2005), studied whether or not consumer proximity to the company is an antecedent of the company's environmental information provision, through two proxies – brand name products and direct provision to consumer markets. According to his findings, brand name and consumer focused firms had a higher tendency to provide information concerning their environmental performance in comparison to their counterparts. The reason is because it was considered that companies with brand names stand out more in the consumer's point of view and are in constant consumers' scrutiny (Haddock, 2005).

According to Benito and Benito (2006), it is proposed that firms that are nearer to the final consumers have a greater tendency to carry out environmental disclosure. Similarly, Haddock-Fraser, and Fraser (2008) examined if close-to-market (C2M) firms provide more or less information concerning the environment in comparison to business-to-business (B2B) firms. The study found that, companies who are close to market or are brand-name companies, are more likely to disclose their environmental aspects.

However, findings of some recent studies came with supporting of this relationship. For example, Darus *et al.* (2014) revealed a significant and positive relationship between CSR reporting and customer influence. Nurhayati *et al.* (2015) revealed that international brand is statistically significant factor in explaining the variation of social and environmental disclosure. They argued that the brand-name companies may impose their values in regard to social and environmental activities and disclosure to their overseas suppliers in order to maintain their well-established image.

In the context of oil and gas industry, the final aim of the business is to supply the industries and consumers with their needs of petroleum products in several states and kinds. Marketing activity is required to transfer the oil and gas or their bi-products from the producers to the end users. The producing company sells its oil and gas directly to an end-user or to a trader or broker. While crude oil and natural gas of a producing company may be sold to brokers, refineries or other integrated oil and gas companies, the company may integrate all activities, upstream and downstream, including refining and marketing activities (Barry, 1993).

However, when a company has finished products distributed to end-consumers, regardless whether the company sales its products by itself or by its brokers, its name will be well known to the final consumers. Therefore, the company faces more public pressure, which in turn drives it to disclose more environmental information with higher quality.

Based on the above, it can be hypothesized that:

H4: There is a positive relationship between closeness to market and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.2 Ownership Structure

Soliman *et al.* (2012) concluded that different owners have differential impacts on the firm's CSR engagement. Specifically, previous studies revealed that companies with different ownership structures vary in disclosing their environmental disclosure. Lapointe *et al.* (2005) argued that the firm's ownership structure can influence its disclosure strategy. Similarly, Peiyuan (2005) argued that companies with different ownership structures vary in their willingness to disclose environmental information. Numerous prior empirical studies highlighted the important influence of ownership structure towards social and environmental disclosure incentives (cf. Aburaya, 2012; Brammer & Pavelin, 2008; Chang, 2013; Cormier *et al.*, 2005; Darus *et al.*, 2013; Das *et al.*, 2015; Eljido-Ten; 2004; Esa *et al.*, 2015; Haji, 2013; Halme and Huse (1997; Haniffa and Cooke, 2005; Hassan, 2010; He and Loftus, 2014; Huafang and Jianguo, 2007; Nurhayati *et al.*, 2015; Reverte, 2009; Rizk *et al.*, 2008; Roitto, 2013; Rupley *et al.*, 2012; Said *et al.*, 2009; Sulaiman *et al.*, 2014; Tagesson *et al.*, 2009).

In prior research, there were two major dimensions of ownership that have been focused on; they are ownership concentration and type of ownership (i.e. foreign

ownership, institutional ownership, state ownership, managerial ownership and family ownership). In this study, four dimensions of ownership structure are examined; they are ownership concentration, foreign ownership, institutional ownership, and state ownership. However, the results of previous studies are mixed. This study focuses on four dimensions of ownership structure, which are ownership concentration, foreign ownership, institutional ownership, and state ownership.

3.4.2.2.1 Ownership Concentration

Stakeholder theory suggests that the more power the stakeholder holds, the more the firms need to listen and satisfy their needs and demands (Gray *et al.*, 1995a; Yusoff *et al.*, 2006; Yusoff and Othman, 2013). Based on this, it was suggested that “an organization will respond to the concerns and expectations of powerful stakeholders and some of the response will be in the form of disclosure” (Dibia and Onwuchekwa, 2015, p. 147). Thus, as firms’ shareholders are primary stakeholders, the strength (power) of the shareholders influences the disclosure of firm.

Different ways were used by prior studies to measure the power of the shareholders. Some studies (e.g. Malone, Fries & Jones, 1993; Mckinnon & Dalimunthe, 1993) used the number of shareholders, while others (e.g. Christopher & Hassan, 1996; Frost, 1999) used ownership concentration as a proxy for the shareholder power. The concentrated ownership provides firms lower incentives to disclose information to meet the needs of shareholders that are non-dispersed.

Consistent with stakeholder theory, it was argued that investors or shareholders are a primary stakeholder group, and a primary beneficiary of corporate disclosure.

Therefore, a company owned by large block owners receives less pressure to publicly disclose their information, and in turn actual disclosure decreases. This is because large block owners who own a large percentage of the company's shares are more able to obtain information directly from the company. In addition, such company is less reliant on smaller investors (Laporta, Silanes, Shleifer & Vishny, 1998). Santema and Oijen (2005) stated that with concentrated equity ownership, there is a minimal need for disclosure.

It is argued that firms characterized as having closely-held ownership do not react to public investors' information costs as the dominant shareholders often have easy access to the required information (Cormier *et al.*, 2005). The more diffuse the ownership, the greater the corporate disclosure because this helps owners to monitor the behaviour of management. When ownership is less diffuse, less monitoring is required (Hassan, 2014). Thus, for shareholders, in a concentrated shareholdings structure, it is expected that management will disclose less information on CSR due to the lesser number of shareholders exerting pressure for companies to disclose their social responsibility practices (Darus *et al.*, 2014).

Several previous studies provided evidence about the influence of ownership concentration on disclosure practices worldwide. For example, McKinnon and Dalimunthe (1993) showed that firms having dispersed ownership provide more voluntary information disclosure and Hossain, Tan and Adams (1994) demonstrated that a negative relationship exists between ownership concentration and the degree of voluntary disclosure among listed firms in Malaysia. Oliveira, Rodrigues and Craig

(2006) also indicated that Portugal's firms with lower ownership concentration disclose more voluntary information about intangibles.

In the context of social and environmental disclosures, a negative relationship between block ownership and disclosure is reported in previous studies. For example, Cormier and Magnan (1999) reached to the conclusion that a negative relationship exists between concentrated ownership and environmental disclosure. In a later study, Cormier and Magnan (2004) stated that concentrated ownership determines environmental disclosure in print-based as well as web-based disclosure of environmental performance. Brammer and Pavelin (2006) revealed that level and quality of environmental disclosure are negatively associated with the size of the largest shareholding. Hassan (2010) found that the ownership diffusion is associated with the quantity and quality of corporate social disclosure. Darus *et al.* (2014) revealed a significant and negative relationship between CSR reporting and concentrated shareholdings. Hassan (2014) revealed that higher percentage of substantial shareholder ownership leads to less CSR disclosure.

On the other hand, other studies, for example, Craswell and Taylor (1992) found no significant relation between ownership structure and the disclosure of oil and gas reserves. Halme and Huse (1997) also found no significant relationship between environmental disclosure and ownership concentration. Tantish (2003) showed that ownership concentration and level of social and environmental disclosure are weakly related. Said *et al.* (2009) also found no relationship between ownership concentrations and the extent of corporate social disclosure.

Along a similar line of contention, Haji (2013) revealed that ownership concentration is insignificant in determining the quality of CSR disclosures. Sulaiman *et al.* (2014) indicated that there is no relationship between ownership distribution and the quality of environmental disclosure. Esa *et al.* (2015) revealed that the association between the level of CSR disclosure and ownership concentration is not significant.

However, prior literature also revealed a positive relationship between ownership concentrations and disclosure. For example, Chang (2013) indicated that firms with concentrated ownership disclose more environmental information, and Soheilyfar *et al.* (2014) indicated a significant positive relationship between ownership concentration and the quality of disclosure.

Thus, although some previous studies found no relationship between ownership concentration and disclosure practice, or positive relationship between the two variables, majority of literature shows a negative association between ownership concentration and disclosure in general and environmental disclosure in particular. So, based on stakeholder theory perspectives and the results of majority of previous studies, it is expected that ownership concentration will negatively influence the quality of voluntary disclosure of environmental information. Therefore, the following hypothesis is developed:

H5: There is a negative relationship between degree of ownership concentration and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.2.2 Foreign Ownership

The relationship between disclosure and foreign ownership was rationalized by many perspectives. From political economy perspective, it is well recognized that every

country has unique norms and customs that are pursued by its citizens and that every country has different laws, rules and regulations governing trade and business affairs (Malone *et al.*, 1993), and each country may have different environmental institutional settings (Kolk and Fortanier, 2013). Thus, it is assumed that higher levels of investment from abroad might indicate a greater influence of foreign practices (Jeon *et al.*, 2011; and Yoshikawa *et al.*, 2010, as cited in Soliman *et al.*, 2012).

Stakeholder theory admits that “an organization will respond to the concerns and expectations of powerful stakeholders and some of the response will be in the form of disclosure” (Dibia and Onwuchekwa, 2015, p. 147). Shareholders are considered as a primary and influential stakeholder group for a firm. So, the firm has to meet their needs to information. Foreign shareholding can play an important role in improving disclosures (Raithatha and Bapat, 2014). Specifically, stakeholder theory views environmental reporting as a tool in the management of relations with stakeholders (De Villiers and Van Staden, 2006; He and Loftus (2014). It was recognized that awareness concerning environmental issues and attention on the environmental disclosure in developed world are higher than in developing world (Chaudire *et al.*, 2014; Eljayash *et al.*, 2012; Hossain *et al.*, 2006; Kaur, 2015; Lu and Abeysekera, 2014). Therefore, foreign investors’ expectations and requirements for information are higher than local investors. Thus, firms with foreign investors may voluntarily disclose more information to meet their expectations.

There exists a greater disclosure requirement as a way to oversee management action by foreign owners as explained by Haniffa and Cooke (2002). In addition, Huafang

and Jianguo (2007) claimed that for the effective competition in the capital market, firms with foreign shares would readily disclose more information. It was also argued that, companies with foreign promoter holding may also have to comply with financial reporting requirements from several regulators which may improve their disclosure practices (Raithatha and Bapat, 2014).

Numerous prior studies have examined the relationship between foreign ownership and disclosure (either financial disclosure or social and environmental disclosure). Previous studies frequently indicated a positive relationship between foreign ownership and level of voluntary disclosure. For instance, a significant positive association was indicated by Haniffa and Cooke (2002) between the foreign ownership proportion and the voluntary disclosure level in Malaysian listed companies, and Haniffa and Cooke (2005) found a strong relationship between corporate social disclosure and foreign share ownership. Peiyuan (2005) also showed that companies with foreign capital are more likely to disclose environmental information than others. Chapple and Moon (2005) also found a significant international exposure (in terms of foreign ownership)–CSR disclosure relationship, while Cormier *et al.* (2005) revealed that foreign ownership is a factor that influences environmental disclosure, but they did not predict the direction for this influence. Rather, they argued that if majority of the firm’s shareholders are foreign, it may be more challenging to acquire information concerning the firm from other alternative (i.e. other than publically published) sources, so the firm must improve the quality of its environmental disclosure as it is a shareholders’ value-added service. Therefore, it is expected that foreign ownership positively influences the extent of environmental disclosure.

Kenya, Barako (2007) revealed a positive relationship between foreign ownership and voluntary disclosure of Kenyan listed companies. He attributed this to the owners-management's separation in terms of geography in which case management may be more inclined to provide information through annual reports. Huafang and Jianguo (2007) found a relationship between significant foreign listing/shares ownership and increased voluntary disclosure. They claimed that effective competition in the capital market entails firms with foreign shares to increase their voluntary disclosure. Similarly, Soliman *et al.* (2012) indicated a significant positive relationship between CSR disclosure and foreign ownership, Darus *et al.* (2013) revealed that the quality of CSR information disclosed on corporate website is positively influenced by the foreign ownership, and Raithatha and Bapat (2014) found a positive association between foreign shareholding and disclosures. They concluded that having foreign promoter shareholding improves disclosures.

However, some previous studies found no association between foreign ownership and the extent of environmental disclosure. For example, Said *et al.* (2009) found no relationship between foreign ownership and the extent of social disclosure. He and Loftus (2014) indicated that there is no association between foreign ownership and the extent of environmental disclosure, and Esa *et al.* (2015) revealed that the association between the level of CSR disclosure and foreign ownership is not significant.

Although the majority of prior studies revealed a positive relationship between foreign ownership and disclosure (particularly, environmental disclosure), there are some converse arguments and empirical results. For example, Cormier *et al.* (2005)

argued that since environmental concerns are higher in Germany (country of sample of the study) than in many other countries, foreign ownership may negatively influence the extent of environmental disclosure. Results of Cormier *et al.* (2005) came in consistent with its hypothesized relations as the study indicated a relationship between foreign ownership and the extent of environmental disclosure on both directions, positive and negative (depending on the origin country of foreign owners). Thus Based on this and the fact that environmental concerns are different from country to country (KPMG, 1999), it can be argued that the direction of relationship between foreign ownership and environmental disclosure depends on the country of origin of the foreign shareholders (i.e. whether environmental concerns in countries of those foreign shareholders are higher or lower than in company's country of origin).

In sum, regardless of the possibility of negative impacts of foreign ownership in case the foreign investors belong to countries in which environmental concerns are lower than the country in which reporting company operates, this study predicts a positive relationship between foreign ownership and environmental disclosure quality of oil and gas companies in developing countries. This is because foreign shareholders of an oil and gas company in a developing country usually come from developed countries (Kamil, 1992) where environmental concerns are higher (Cormier *et al.* (2005; O'Rourke & Connolly, 2003). Moreover, foreign investors' expectations and requirements for information, including environmental information, are higher than local investors. The following hypothesis is expressed in an alternative form as:

H6: There is a positive relationship between foreign ownership and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.2.3 Institutional Ownership

From the theoretical perspective, stakeholder theory posits that the more powerful the stakeholders are, the more corporations will need to abide by their needs and demands (Gray *et al.*, 1995a; Yusoff *et al.*, 2006; Yusoff and Othman, 2013). It was argued that corporations must respond to influential stakeholders pressure (Maynard, 2001). Institutional investors often seek stable returns on their investments; therefore, they are interested in long-term profitability of the companies in their portfolios and hence have the incentive to get engaged in corporate strategic management (Soliman *et al.*, 2012). Due to higher ownership stake, institutional shareholders may influence the decision making of board. They may even encourage higher disclosures in the financial statements (Raithatha and Bapat, 2014).

Prior literature showed contradictory arguments and varying results regarding the association of institutional ownership with disclosure (in general or social and environmental disclosure in particular). Some studies argued for a positive relation between institutional ownership and disclosure. For example, Bushee and Noe (2000) claimed that institutional investors are assumed to be more aware of disclosure activities. The reasons behind this are: 1) institutional investors gravitate to firms with good quality disclosure as this could minimize the trades price impact, 2) good disclosure may affect the possibility for profitable trading opportunities that maximizes the interest of institutional investors, 3) institutions actively involved in corporate governance opt for firms with informative disclosure as they depend on public disclosure or they do not possess sufficient resources to obtain private information and 4) corporate disclosure is a reasonably cost method to oversee the performance of management. Similarly, Barako (2007) argued that "due to the large

ownership stake, institutional investors have strong incentives to monitor corporate disclosure practices; thus, managers may voluntarily disclose information to meet the expectations of large shareholders" (p. 117).

It was also argued that companies conducting CSR are expected to be more attractive in the eyes of investors and especially institutional investors (Roitto, 2013). In contrast, Lapointe *et al.* (2005) argued that since firms with high percentage of institutional ownership may use some special communication means to communicate its information to their main institutional shareholders, these firms are expected to disclose less information in their publicly available mediums.

Empirical studies also revealed conflicting results. For example, Healy *et al.* (1999) indicated a positive association between disclosure quality and level of institutional ownership. Similarly, Bushee and Noe (2000) also stated that higher institutional ownership positively related to the quality of disclosure. In the same line, Soliman *et al.* (2012) revealed a significant positive relationship between CSR disclosure and institutional ownership

On the contrary, Lapointe *et al.* (2005) indicated that firms with high percentage of institutional ownership disclose less information than others. Htay *et al.* (2013) indicated that better disclosure quality of the annual reports can be achieved by having lower ownership by the institutional shareholders. Another stream of studies revealed no association between institutional ownership and disclosure (e.g. Ali *et al.*, 2007; Ginglinger & L'Her, 2002; Raithatha and Bapat, 2014; Rupley *et al.*, 2012). However, Aburaya (2012) revealed that institutional ownership is not related to

to the quality of environmental disclosure category, but is significantly and positively related to the disclosure quality of compliance with environmental laws and standards category, whereas significantly and negatively associated with other environmentally-related information disclosure quality.

Based on the above discussion, the following hypothesis is proposed;

H7: There is a positive relationship between institutional ownership and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.2.4 State Ownership

The argument for an association between government ownership and social and environmental disclosure is drawn from many theories. From the perspective of legitimacy theory, it is assumed that disclosure is used as a legitimization strategy in government institutions. In this regard, it is argued that government-owned companies face more pressure from society than the non-government-owned companies. Thus, government owned companies may use the disclosure as part of their legitimization strategy (Adnan, 2012). Amran and Devi (2008) argued that, the amount of shares owned by government bodies in firms will give them the power to intervene and generate pressure for such firms to disclose additional information in order to satisfy public expectation.

According to stakeholder theory and based on prior research results, stakeholder pressure can explain the corporations' social and environmental strategies including disclosure. Specifically, Frynas (2009, p. 31) stated that "stakeholder theory can explain many of the social and environmental strategies of state-owned companies". Thus, with respect to state-owned companies, the percentage of state ownership can

be a predictor of the differences between the social and environmental disclosure across companies.

However, prior literature showed contradictory arguments and varying results regarding the association of government ownership with social and environmental disclosures. Some studies argued and supported a positive relation between government ownership and disclosure. For example, Li (2006), Amran and Devi (2008), Peng (2009), Said *et al.* (2009), and Song and Zu (2009) revealed that government ownership is positively and significantly correlated with the level of corporate social responsibility disclosure. Tagesson *et al.* (2009) also revealed that state-owned companies disclose more social information on their websites than privately owned corporations do.

Similarly, Chang (2013) conformed that firms with higher state ownership tend to provide more environmental information compared to firms with higher non-state ownership, and Naser and Hassan (2013) evidenced this finding, as they indicated that corporate social responsibility is positively and significantly associated with the percentage of shares owned by the government. However, the positive relationship between the government ownership and social and environmental disclosure was explained as that companies owned by state are more scrutinized, so they receive more pressures from the state as owner, in addition they face more pressures from the mass media to comply with society's expectations (Tagesson *et al.*, 2009).

In contrast, it was argued that state owned companies face fewer pressures for voluntary disclosures. There are many reasons that weaken the pressures for

voluntary disclosures by state-owned firms. First, shares that are owned by the state are not publicly tradable and the government or the state holders may concentrate on distributing wealth and sustaining the order in society (Xu and Wang, 1999) – in other words, enhancing shareholder value may not be the state-owned firm's main objective (Huafang and Jianguo, 2007). Second, the government is the sole or the majority shareholder in a state-owned firm and it is able to seek information from different sources and to gain access to financing compared to its non-state counterparts (Eng and Mak, 2003). Third, the social and environmental reports of such firms are often not as scrutinized by civil society groups than non-state owned firms (Frynas, 2009). In addition, state-owned companies are less dependent on the capital market to finance their projects and may have less motivation to provide information to improve their image, while, companies with lower levels of government ownership are more likely to be incentivized to disclose greater environmental information to build a good relationship with the capital market as well as with the government (He and Loftus, 2014).

In line with these arguments, some empirical studies showed a negative association between state ownership and environmental disclosure. For example, the surveys by Sustainability Ltd. and UNEP (1999) found that the overall rate of environmental reporting of oil and gas companies is brought down by, among others, state-owned companies.

However, other studies found no relation between the two variables. For example, Huafang and Jianguo (2007) revealed that state ownership of companies in China is insignificantly related to voluntary disclosure. Darus *et al.* (2014) found no

significant relationship between CSR reporting and government shareholdings. He and Loftus (2014) indicated that there is no association between government ownership and the extent of environmental disclosure. Esa *et al.* (2015) revealed that the association between the level of CSR disclosure and government ownership is not significant. While, Haji (2013) revealed mixed results, as he observed that government ownership did have a significant and positive relationship with the quality of corporate social disclosure in the year 2006, but this relationship has not been evidenced in the year 2009.

From the above discussion, the hypothesis can be stated as follows:

H8: There is a positive relationship between state ownership and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.3 Economic Performance

The relationship between corporate social responsibility activities and reporting with corporate performance (including economic performance) attracts the interests of different stakeholders (Bayoud *et al.*, 2012). A wide range of prior research has examined the association between corporate economic performance (as an explanatory variable) and disclosure social and environmental disclosure (Hossain, *et al.*, 2006). However, pertinent research showed mixed results.

Good financial performance is seen as an incentive for firms to disclose more detailed environmental information. Many previous studies have confirmed that the better the financial stance of a company, the higher will be the level of environmental disclosure. Alnajjar (2000) indicated a positive financial performance-voluntary environmental disclosure relationship. Also, Cormier and Magnan (1999) highlighted

relationships between disclosure of environmental performance and several financial and economic performance indicators such as return on assets and debt ratio.

Al-Tuwaijri, *et al.* (2004) indicated that environmental reporting is positively associated to economic performance. Islam and Deegan (2010b) suggested that in developing countries, an organization will embrace social responsibilities, including disclosing of related information, to the extent that there is an economic imperative to do so. They added that, unless pressure or economic incentives are present, it is likely that, organizations in developing nations will be laggard in acknowledging social responsibilities that have already been acknowledged by the international community. Inconsistently, other studies (e.g. Patten, 1991) found a negative relation between economic performance and environmental disclosure, whereas some others (e.g. Hackston and Milne, 1996) found no association between the two abovementioned variables.

However, different studies used different proxies for economic performance. The present study uses two proxies for corporate economic/financial performance, namely, profitability and leverage.

3.4.2.3.1 Profitability

From legitimacy perspective, Neu *et al.* (1998) argued that profitability can be considered to be related to social responsibility disclosure. According to Roitto (2013) legitimacy theory suggested that due to company's deep bond to its surrounding society, it is obligated to show that its profits are earned following certain norms and ethical conducts. From stakeholder perspective, it is expected that

there is a positive association between economic performance and social responsibility activities and disclosure (Roberts, 1992).

The positive relationship between a firm's profitability and its environmental disclosure was explained by many researchers. For example, Hossain *et al.* (2006) argued that "For profitable companies, if the rate of return or return on investment is more than the industry average, the management of a company has an incentive to communicate more information (including social and environmental information) which is favourable to it as the basis of explanations of good news and is likely to disclose social and environmental information in their corporate annual reports as a result" (Hossain *et al.*, 2006, p. 4). Supporting this perspective, Ying (2006) argued that firms with a higher return on assets (as a proxy for financial performance) are more likely to be incentivized to disclose greater environmental information as they have the resources to spend on environmental abatement.

Through a thorough review of prior research, mixed arguments and results were found regarding the existence and direction of relationship between firm profitability and disclosure in general or social and environmental disclosure in particular. Roberts (1992) claimed that firms having higher returns on assets are more likely to disclose environmental disclosure. Similarly, Zhang *et al.* (2009) evidenced that profitable companies are more incentivized to do the same.

Along the same line of contention, Wilmshurst and Frost (2000) claimed that firms that are recipients of higher profits disclose greater information of their environmental performance compared to those that are not. Gray *et al.* (2001)

revealed that there is a positive relationship between corporate social and environmental disclosure and profit. Haniffa and Cooke (2005) proved that profitability was significantly related to CSR. Silva (2008) indicated that environmental quality is significantly and positively affected by economic success (profitability), and Zhang *et al.* (2009) reported a positive relationship between profitability and social and environmental disclosure. Pahuja (2009) provided strong evidence in support of the influence of profitability on environmental disclosure practices of Indian manufacturing companies. Tagesson *et al.* (2009) indicated that company profitability is positively associated with the extent of social and environmental disclosure. Said *et al.* (2009) observed that the profitability did have significant and positive relationship with CSR disclosure.

Recent studies also supported this positive relationship. For example, Setyorini and Ishak (2012) found that ROA was positively associated with corporate social and environmental disclosure level. Yin (2012) assesses the association between CSR and financial performance of Chinese firms for the period from 2008 to 2009. The study showed that the prior financial performance (Return on total assets) is positively related to corporate social responsibility disclosure. Roitto (2013) revealed that CSR disclosure ratings of Finnish listed companies are positively influenced by their profitability. Kansal *et al.* (2014) revealed that profitability determines CSR in a positive manner. Lu and Abeysekera (2014) indicated that firm profitability has significant and positive association with social and environmental disclosure. Muttakin and Khan (2014) found that extent of CSR disclosure has positive and significant relationships with firm profitability.

More recently, however, Esa *et al.* (2015) revealed that profitability is significantly and positively associated with the level of CSR disclosure. Nurhayati *et al.* (2015) revealed that profitability is a statistically significant factor in explaining the variation of social and environmental disclosure.

Contrastingly, other studies such as Leary (2003) who contended the presence of a negative relation between profitability and social and environmental disclosure level. Whereas some other studies such as Cowen, Ferreri and Parker (1987) Patten (1991), Hackston and Milne (1996), Purushothaman *et al.* (2000), Hamid (2004), Brammer and Pavelin (2006), Brammer and Pavelin (2008), Reverte (2009), Bowrin (2013), Giannarakis (2014), He and Loftus (2014), and Dong *et al.* (2015) concluded that profitability is not associated with corporate social responsibility disclosure. Abd Rahman *et al.* (2011) revealed that profitability is insignificant in explaining the total CSR disclosure, Aburaya (2012) indicated that there is no significant relationship between the quality of environmental disclosure and profitability, and Haji (2013) found no relationship between the profitability and the quality of CSR disclosures. Choi *et al.* (2013) found no relationship between the profitability and the extent of voluntary carbon reporting. Chithambo and Tauringana (2014) found no significant association between profitability and GHG disclosure. Sulaiman *et al.* (2014) indicated that profitability had no significant relationship with the quality of environmental reporting. Dibia and Onwuchekwa (2015) revealed that there is no relationship between profitability and corporate environmental disclosure in oil and gas companies of Nigeria.

From the above discussion, it can be noted that there are different results and different interpretations regarding association between profitability as a proxy for economic performance and SRD (including ED). While some results are confirming the existence of association, others are not. Even within studies, those that concluded presence of the relation, there is difference regarding the sign of such relation (i.e. positive or negative). However, most of previous studies indicated the existence of positive relation between profitability and SRD (including ED). This leads to the following hypothesis:

H9: There is a positive relationship between profitability and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.3.2 Leverage

The term "leverage" refers to the degree to which a firm's financial structure is geared (Karim & Ahmed, 2005), or an extent to which a firm depends on debts to finance itself. Among the resources that a firm depends on to finance itself are lenders. In modern business environment, a firm depends on several financing resources, including internal and external resources.

It is argued that debt financing role as external financing can bring about lenders monitoring (Ang, Davies & Finlay, 2000). With the increase in leverage, the default risk also increases and thus the lenders incentive for oversight also increases (Mustapha, 2009). Jensen (1986) argued that managerial actions of firms characterized by high debts can be monitored by debt holders but debt holders possess no legal rights to peruse the books and records of the firm. Therefore, they depend upon the financial statements to know about the firm's status (Tauringana &

Clarke, 2000). In other words, debt holders rely on public disclosure as a mechanism for monitoring firm performance.

Debt holders have no legal rights to access the firm's books and records, instead they depend on financial statements to know about the firm's status (Tauringana & Clarke, 2000). A firm with high debt would be more required to make great financial disclosure to facilitate the monitoring of shareholders of debt contracts compliance (Mustapha, 2009).

From stakeholder theory perspective, it is argued that leverage ratio represents a company's ability to meet financial obligations, and can capture the importance of creditors as stakeholders in a firm's wealth (Ma & Zhao, 2009). Based on stakeholder theory, Roberts (1992) argued that as a stakeholder group, the power of creditors hinges on the level of the dependence the company has on debt financing. He added that firms should manage the impressions of creditors as they are important stakeholders. The higher the firm depends on creditors funding, the more likely it will satisfy their expectations concerning corporate responsibility activities through the use of voluntary disclosures. Watts and Zimmermen (1986) demonstrated that managers of firms having high debt-equity ratio are assumed to employ accounting policies and methods that would assist them in steering clear of debt-covenants' violation. Disclosure, including environmental disclosure, may be a policy that can be used by firms to do so.

Moreover, Craswell and Taylor (1992) contended that the shareholders and the debt holders' demand for information will increase with the corresponding increase in

debt level. Disclosures are expected to increase as firm debt increases because of the monitoring demands of debt-holders (Leftwich, Watts & Zimmerman, 1981). In this regard, Purushothaman *et al.* (2000) claimed that companies with high leverage may have closer relationship with their creditors and use other means for SRD. Another reason is that higher quality disclosures have been found to have a favorable effect on the default risk premium charged by debt-providers (Sengupta, 1998).

It was argued that firms having higher level of leverage have to provide higher disclosure to satisfy the demand of creditors for more information and to minimize agency costs and information asymmetry with shareholders compared to their counterparts having low leverage (cf. Alsaeed, 2006; Al Shammari, 2008; Meek *et al.*, 1995; and Zarzeski, 1996). In order for lenders to take decision to lend to a firm, they get concerned about the financial situation and other aspects of the firm that affect its ability to meet debt obligations. In addition to financial situation, environmental performance is considered as a critical issue. Therefore, information on environmental performance gains its importance. While private debt holders may conduct negotiations for the provision of additional information¹¹ such as those pertaining to the environment, both shareholders and public debt holders are largely dependent on public disclosure. Thus, the information demand by the latter two groups (public debt holders and shareholders) increases with the increase of debt level (Craswell & Taylor, 1992).

Prior empirical research shows contradictory results regarding the relationship between leverage and disclosure. For instance, Zarzeski (1996), Al-Shammari (2008),

¹¹ As having alternative channel of disclosure by a stakeholder group, such as, holders of private debt may abolish or at least reduce its pressure on firm to disclose information via public available media.

and Naser (1998) revealed that company gearing is significantly and positively associated with disclosure.

In the context of social and environmental disclosure, Roberts (1992) provided empirical results that provider of funds such as creditors have a significant positive relationship with CSR disclosure. Purushothaman *et al.* (2000) revealed that high leveraged firms may be in close proximity to their creditors and use other means for SRD. Adams (2002) indicated an association between social, ethical and environmental reporting and debt/equity ratio. Similarly, Li (2006) found positive leverage-social and environmental disclosure relationship. Alciatore and Dee (2006) supported the higher leverage-higher level of environmental disclosure relationship. Clarkson *et al.* (2008) found a significant positive association between debt ratio and level of environmental disclosure.

Recent studies also supported this positive relationship. For example, Chang (2013) revealed that financial leverage has a significantly positive impact on environmental disclosure. Choi *et al.* (2013) revealed a positive relationship between the leverage and the extent of voluntary carbon reporting. Chithambo and Tauringana (2014) indicated that company gearing is significantly and positively associated with GHG disclosure, and Sulaiman *et al.* (2014) revealed a significant positive association between leverage and the quality of environmental disclosure.

Other studies also indicated relationship between leverage and disclosure, but on the contrary direction. For instance, Brammer and Pavelin (2006) revealed that both level and quality of environmental disclosure are positively related with less

leveraged companies, Ying (2006) indicated a negative relationship between debt-equity ratio and extent of environmental disclosure, and Muttakin and Khan (2014) found that extent of CSR disclosure has negative relationship with firm leverage.

However, other studies were not supportive for any relation between leverage ratio and the voluntary disclosure level (e.g. Ahmed & Nicholls, 1994; Soheilyfar *et al.*, 2014) found no significant association between leverage and the extent of voluntary disclosure. In the context of social and environmental disclosure also some previous studies could not prove any relationship between leverage and the disclosure. For example, Haniffa and Cooke (2005) found that gearing did not seem to be related to CSRD. Reverte (2009) concluded that leverage is not associated with corporate social responsibility disclosure. Pahuja (2009) indicated that a negative (but not significant) relationship between the debt-equity ratio and the extent of environmental disclosure. Abd Rahman *et al.* (2011) revealed that leverage is insignificant in explaining the total CSR disclosure. Setyorini and Ishak (2012) revealed no association between financial leverage and corporate social and environmental disclosure level. Choi *et al.* (2013) revealed that no relationship between the leverage and the extent of voluntary carbon reporting. Haji (2013) found no relationship between the leverage and the quality of CSR disclosures. Roitto (2013) revealed no significant relationship between CSR disclosure ratings and the leverage ratio.

More recently, Giannarakis (2014) highlighted non significant association between firm leverage and the level of CSR disclosure. He and Loftus (2014) also revealed non significant association between firm leverage and the level of environmental

disclosure. Soheilyfar *et al.* (2014) revealed that, the relationship between firm leverage and disclosure quality is not significant. Dibia and Onwuchekwa (2015) revealed that there is no relationship between leverage and corporate environmental disclosure in oil and gas companies of Nigeria. Dong *et al.* (2015) showed insignificant relationship between a firm leverage and its CSR disclosure quality. Esa *et al.* (2015) revealed that the association between the level of CSR disclosure and leverage is not significant.

However, based on theoretical perspectives and findings of some previous studies, the following hypothesis is proposed:

H10: There is a positive relationship between leverage and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.4 Multi-nationality

With globalization environment, and in today's borderless world, companies are encouraged to do businesses and exploit investment opportunities across their national boundaries, and the number of international companies is steadily increasing (Mustapha, 2009; Rahman, 2004). Business organizations are operating in an open environment in the globe.

Multinational company (MNC) is defined by the United Nations (UN) as "a company with foreign operations in two or more countries" (as cited in Gray, Radenbaugh and Roberts, 1990). It is also defined as "A corporation that has its facilities and other assets in at least one country other than its home country. Such companies have offices and/or factories in different countries and usually have a centralized head office where they co-ordinate global management" (Natsvlshvili, 2008, p 7).

International experience is developed by operating in, and depending upon, foreign markets (Bansal, 2005). International experiences may also be transferred from parent companies to their subsidiaries (Bansal, 2005). While some studies (e.g. Branco and Rodrigues, 2008; Lopes and Rodrigues, 2007) measure multi-nationality by percentage of foreign sales, other studies measure it by the mere existence of foreign sales or operations (cf. Mustapha, 2009).

Because of the challenges of accessing risk capital and the lack of expertise and skill required for exploring resource and development, majority of developing countries grant exploration and development rights of oil and gas resources to foreign firms having sufficient resources in terms of expertise, capital and technology (Pongsiri, 2004). Oil and gas operations in developing countries are often conducted by multinational companies or subsidiaries of international companies. These multinational oil and gas companies are subjected to the prevailing regulations of host countries in addition to the prevailing regulations in their original countries (Kamil, 1992).

Environmental accounting is gaining more interest especially from multinational energy companies (Hamid, 2002). A multinational multi-product company would have more to disclose than a simpler organization (Rizk *et al.*, 2008). Some authors argued that in less developed countries, it is expected that, a company that does considerably business operations internationally, is susceptible to a more extensive array of stakeholder influences and greater scrutiny from the international community (Branco & Rodrigues, 2008).

The relationship between international experience and CSRD has been explained from different perspectives such as social and political theories (Choi, 1999), and perspective of resource base (Bansal, 2005). This study uses the social and political theories (legitimacy, stakeholder, and political economy theories).

It is recognized that multinational firms can enjoy the power to overturn the wishes of sovereign nations to control activities within their own political boundaries (Burritt and Welch, 1997). From political economy perspective, it is well recognized that every country has unique norms and customs that are pursued by its citizens and that every country has different laws, rules and regulations governing trade and business affairs (Malone *et al.*, 1993), and each country may have different environmental institutional settings (Kolk and Fortanier, 2013). So, a company that has operations in foreign countries has to consider the different norms and customs, laws, rules and regulations of those countries where the company is operating in. In addition, the company may be required to fulfill different special reporting requirements by each country the company is operating in (Malone *et al.*, 1993). In terms of sales, it was argued that consumers are considered as a major stakeholder groups for any firm. So, forging sales could also be important in regulating a firm's environmental activities and disclosures (Kolk and Fortanier, 2013).

Depoers (2000) argued that operating in a number of countries increases the extent of reporting. Moreover, companies are prompted to comply with the usual reporting practices in countries in which they operate. It was argued that, based on legitimacy theory companies respond to the expectations of relevant public, and for multinational companies, relevant public is not limited to home country but rather is

more universal orientation (Newson and Deegan, 2002; Hassan, 2010). Thus, from legitimacy perspective multinational firms face the potential for stronger and more diverse attacks on their legitimacy, forcing them to adopt more stringent environmental strategies and to disclose more information in order to manage and maintain legitimacy and prevent reputation damage (Kolk and Fortanier, 2013).

Momin and Parker (2013) argued that “a subsidiary may face legitimacy threats from both internal and external sources, consisting respectively of their parent corporations’ approval and the regulative, normative, and cognitive domains of their host country environment” (p. 226). Thus, the powerful multinational companies could use environmental disclosures to try and legitimize their current activities (Hines, 1988).

From stakeholder theory point of view, it is argued that in less developed countries it is expected that a firm with international operations is susceptible to a more extensive array of stakeholder influences and to the close scrutiny of the international community (Branco & Rodrigues, 2008). Cooke (1989) also argued that companies operating in different geographical areas are expected to have higher levels of disclosure because they tend to have more sophisticated management control and reporting systems and present more information without incremental costs.

Prior research suggests influence of headquarters of multinational companies in the practices of their subsidiaries. For example, Abdul Aziz and Lee (2007) evidenced the important influence of headquarters of multinational companies in the knowledge management of their subsidiaries. When operations are conducted by a multinational

company, conflicts between the multinational company and the local community are raised, and concerned parties embrace pressures on the companies to be accountable on the effects of their operations in the local community (Calvano, 2008). In such a situation, multinational companies must first understand the causes of conflict with the local community, and are expected to embrace certain policies, including disclosure strategy, to decrease the negative impacts that generated from environmental incidents (Islam and Islam, 2011).

According to Hines (1988), powerful multinational companies could use environmental disclosures to try and legitimize their current activities. From the perspective of legitimacy theory, the above reasons motivate the subsidiaries of multinational corporations to disclose more information in order to improve their image in the eyes of different pressure groups and public in general, as well as to avert any regulation. It is suggested that “MNC subsidiaries do see benefits in seeking internal legitimacy from their parent company by sending social and environmental information to head office periodically and making relevant information available through CSRR practices as a part of their parent corporations’ management and policy” (Momin and Parker, 2013, p. 225).

Companies that have foreign sales are likely to require foreign resources such as labor and capital. To acquire these resources, the companies will disclose more information (Archambault and Archambault, 2003; Zarzeski, 1996). Depoers (2000) argued that operating in a number of countries and geographical areas increases the extent of reporting, and Jaggi and Low (2000) argued that multinational companies

disclose more detailed information as compared to companies operating in a single country.

It was contended that companies that have foreign investment or trade affairs are increasingly required to disclose information on their environmental aspects to communicate to foreign partners and investors (Peiyuan, 2005). Peiyuan noted that a company that is operating in a certain country and based abroad, is exposed to public pressures at home and abroad. This in turn enforces the company to perform environmentally better and disclose more information.

Lopes and Rodrigues (2007) stated that the more the company is internationalized, the more it is expected to show its goodness as a company. In fact, even those companies that are not internationally listed may be interested in displaying good levels of disclosure if they operate in the international arena. According to Barr (2007) CSR reporting in emerging economies is generally practiced by large companies or by MNCs subsidiaries.

As mentioned above, international experiences may also be transferred from parent companies to their subsidiaries. MNC subsidiaries operating in developing countries are urged to make more disclosures and follow superior standards of reporting due to the following reasons; these companies have to adhere to the host country regulations as well as the parent company's regulations where higher standards of accounting and reporting exist; they are often manned by competent and efficient management and are more inclined to employ up-to-date accounting systems and thus have the potential for disclosure without having to worry about increased processing costs;

and lastly, they are under close oversight by different political and pressure groups in the host country who consider them to be exploitative of the host economy and agents of their own imperialist power (Ahmed and Nicholls, 1994).

Usually, petroleum exploration and production operations are conducted by multinational companies (or their subsidiaries) that have projects in many countries around the world. It may be expected that a subsidiary of multinational company operating in a developing country is under high pressure to perform its activities with high concern on the environment. Therefore, it is imperative that it shows its good performance by disclosing environmental information. This expectation is based on the following (Ahmed & Nicholls, 1994; Hossain *et al.*, 2006; Kamil, 1992; Karim & Ahmed, 2005):

- The oil and gas company is subjected to the prevailing regulations of host countries in addition to the regulations of the country of the parent company, which have substantially higher standards of accounting and reporting¹².
- MNC subsidiaries in developing countries may be crucial to the host countries' economy, and they may face stricter government control.
- They scrutinized by different political and pressure groups in the host country who consider them as economic exploitative and puppets of the imperialist power.

¹² Within the particular context of oil and gas, most subsidiaries of companies in developing countries are affiliated with international companies based on developed countries, where there are mandatory requirements for disclosing some environmental information. For example, European Union Member Countries, Australia, Belgium, Canada, Denmark, France, Norway, Sweden, The Netherlands, and USA, require companies to report on environmental issues (KPMG, 2002).

From the perspective of legitimacy theory, the above reasons motivate the subsidiaries of multinational corporations to disclose more information in order to improve their image in the eyes of different pressure groups and the public in general, as well as to avert any regulation. Previous studies have shown conflicting results regarding the relationship between subsidiary to international companies and environmental reporting. For instance, Ahmed and Nicholls (1994) found multinational company influence as a significant variable in explaining disclosure levels.

A survey of KPMG indicated that companies that disclose CSR information are typically subsidiaries of multinational companies (KPMG, 2005). Peiyuan (2005) surveyed environmental reporting of selected Chinese companies. The survey indicated that in 2001, 27% of response stated the reason for disclosure as to satisfy the parent company outside China. Peiyuan (2005) suggested that firms that are foreign-ventured possess a deeper understanding of the issues and are more inclined to perform environmental disclosure. Chapple and Moon (2005) also found a strong relationship between international exposure in terms of international sales, and CSR reporting. Recently, Bowrin (2013) found a positive relationship between forging affiliation and SED extent, and Kolk and Fortanier (2013) found a positive relationship between environmental disclosure and the degree of internationalization for firms in high-sensitivity sectors from high-standard countries.

However, some previous studies, such as Branco & Rodrigues (2008) showed no significant relation between international experience and CSR, whereas a study by Hossain *et al.* (2006) found no significant relation between extent of social and

environmental disclosure and subsidiary of multinational companies. Similarly, Pahuja (2009) found that the association between extent of environmental disclosure and foreign association is not statistically significant, and no association between exports to sales ratio and extent of environmental disclosure, and Hassan (2010) revealed that degree of multinational activities is not associated with quantity and quality of corporate social disclosure. Recently, Hassan (2014) indicated that the degree of multi-national activities appears not to be related to the level of CSD.

Based on the above, a positive relationship between multi-nationality and quality of environmental disclosure can be expected as follows:

H11: There is a positive relationship between multi-nationality and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.5 Environmental Certification

Several voluntary environmental-related standards and certificates exist around the world. They are aimed at enhancing the competitiveness of products. Environmental certification is considered a signal that indicates that a firm is interested and willing to improve its environmental performance (Baba, 2004). ISO 14001 is the most common environmental certification. According to Adams (2002), certification of EMS can be obtained by firms via ISO 14001 to display their management systems quality and to provide environmentally friendly products to their client.

Specifically, ISO 14001 can be obtained by firms through their systematic, standard and specified environmental activities (Hansen Mowen, 2000, as cited in Baba 2004; and Kimbro, 1999, as cited in Baba, 2004). This type of certification enables firms' improvement of performance and positively affects the business outcomes (Yusoff

and Lehman, 2004). The standard of ISO 14001 offers a voluntary technique for environmental performance and helps companies to confirm their environmental protection commitment without pressure from strict regulations (Sunderland, 1997).

Companies that are ISO 14001 certified are encouraged to establish their mission, targets, policies and procedures that work to oversee the impact of operations on the environment (Yusoff and Lehman, 2004). Organizations are motivated to obtain ISO 14001 because of environmental enhancements, corporate image, enhanced procedures, superior connections with authorizes and the whole society, and increasing open trade opportunities and market strengths (Corbett *et al.*, 2003, Hussein, 2001). In addition, ISO 14001 certification offers external parties the relevant confidence as it evidences the corporations' control over their operations and activities, and their commitment to adhering with all the required environmental legislation and regulations, and that they are constantly enhancing their environmental performance.

Moreover, ISO 14001 also helps in enhancing the performance of the organizations and in positively impacting their business outcome (Yusoff and Lehman, 2004). Organizations adopting ISO 14001 are able to demonstrate their commitment to environmental protection without stress from stringent regulation (Sunderland, 1997). Furthermore, it is believed that in the future, ISO 14001 will be a requirement for entering the market place, and its implementation will be ensured by market forces through the supply chain (Watson and Emery, 2004).

From legitimacy theory point of view, in order to bridge the gap of legitimacy, a company may make changes and report and create awareness of the public concerning such changes (Lindblom, 1994). Environmental certification is considered as a signal indicating a firm's interest and willingness to improve its environmental performance (Baba, 2004). Thus, ISO 14001 can be helpful, as adopting and getting certification of ISO 14001 enable firms' improvement and enhancing of performance, therefore this helps them to display their management systems quality and confirm their environmental protection commitment (Adams, 2002; Sunderland, 1997; Yusoff and Lehman, 2004).

Stakeholder theory concerns how an organization manages its stakeholders (Yusoff *et al.*, 2006). Stakeholder theory admits that "an organization will respond to the concerns and expectations of powerful stakeholders and some of the response will be in the form of disclosure" (Dibia and Onwuchekwa, 2015, p. 147). Corporations disclose information on environmental performance in response to demands of their stakeholders (Alias, 2001; Tilt, 1994). Environmental certificates and standards issuers are recognized as stakeholders of companies (Peiyuan, 2005). Thus, legitimacy and stakeholder theoretical perspectives suggest a positive relationship between environmental certification and environmental disclosure.

In the context of Germany, Morrow and Rondinelli (2002) revealed in their survey that German companies EMS implementation and certification assist in their integration of environmental, health and safety management systems and environmental and quality management systems certified firms also reveal environmental performance enhancements in waste recycling, reduction of both air

and waste emissions, reuse of materials, conservation of water and energy and reduction of environmental and safety occurrences. ISO 14001 mandates that companies lay down communication and maintain it both internally and externally. External communication managers the relationship of the firm with external stakeholder sand can be conducted through the provision of disclosures in various media, such as the annual report, stand-alone sustainability reports and website (Whitelaw, 2004). Companies involved in ISO 14001 provide a higher level of environmental disclosure as it mandates the continuous update of EMS to cover current issues of environmental activities adopted by the firm (Patten and Crampton, 2004).

In a related study, Peiyuan (2005) stated that issuers of environmental standards and certificates are deemed to be a stakeholder group that exerts environmental pressure on firms. Empirical study of Yusoff and Lehman (2004) indicated a significant relationship between ISO certification and total environmental disclosure. A study of Yusoff and Othman (2013) also indicated that environmental disclosure practice in both Malaysia and Australia is influenced by the accreditation of ISO certification. Nurhayati *et al.* (2015) revealed that international certification obtained (such as ISO 14001) is statistically significant factor in explaining the variation of social and environmental disclosure. However, while, Eljido-Ten (2004) did not provide restrictive evidence on this relationship, as the study indicated that ISO 14001 certification seemed significant in the univariate outcome, but not in the multivariate one.

This study categorizes oil and gas companies in developing countries into ISO 14001 accredited companies (ISO companies) and non-accredited ISO 14001 companies (non-ISO companies). Hence, the following hypothesis is formulated:

H12: There is a positive relationship between environmental certification and environmental disclosure content-quality of oil and gas companies in DCs.

3.4.2.6 Membership of Industry's Associations

Industry or trade associations are considered secondary stakeholders for an oil and gas company (Ermilov, 2012; sustainability & UNEP, 1999). There are many international, regional, and national petroleum industry associations around the world. In the era of prosperity of environmental legislation, in order to maintain control over the environmental agenda facing their members, industry associations (including oil and gas industry associations) introduce self-regulating codes of environmental practice and encourage monitoring and reporting of environmental performance (Burritt, 1997). Thus, many international and regional petroleum industry associations have instituted different environmental principles, policies, and codes of conduct and guidelines for protection of the environment (See, Sustainability & UNEP, 1999, pp. 66-67). Many of these associations enforce their environmental policies and codes on their members as membership requirements.

Based on legitimacy theory's prediction, companies who are members of industrial associations are more likely to face media exposure, and hence are more likely to lose legitimacy that threatens their survivals to a significant extent (Deegan, 2002). It is also argued that companies implement and disclose social responsibility activities to stakeholders (including industry associations) to legitimize their existence (Haniffa & Cooke, 2005). Based on stakeholder theory, companies have to respond

to the concerns and expectations of these associations as secondary stakeholders (Ermilov, 2012; sustainability & UNEP, 1999), and some of the response will be in the form of disclosure (Dibia and Onwuchekwa, 2015).

In practice, industry associations introduce self-regulating codes of environmental practice and encourage their members for monitoring and reporting of environmental performance (Burritt, 1997). In addition, several petroleum industry associations publish stand-alone environmental, health and safety reports at an industry level¹³. To do so, member companies of an association report their environmental performance data to the association, which then aggregate and publish the data at an industry level (Sustainability & UNEP, 1999).

Thus, based on the above, industry association, as a stakeholder, creates a pressure on its members to disclose environmental information. Therefore, a positive relationship between membership of industry/trading associations and environmental disclosure can be predicted. Hence, the hypothesis can be stated as follows:

H13: There is a positive relationship between membership of an industry/trading associations and environmental disclosure content-quality of oil and gas companies in DCs.

3.5 Summary

This chapter discussed the research theoretical framework and hypotheses development. Underpinning theories, namely, political economy, stakeholder, and legitimacy theories were discussed. Hypotheses are developed to test whether there is a significant difference between different reporting mediums (namely, annual report, stand-alone reports, and corporate homepages) regarding their environmental

¹³ For example, each year, the API publishes a report on the US petroleum industry's environmental, health and safety performance.

disclosure content-quality, and to examine whether a company's characteristics (company size, type of company and close to market), company ownership structure (ownership concentration, foreign ownership, institutional ownership, and state ownership), company's economic performance (profitability, and leverage), multi-nationality, environmental certification and company membership of industry's associations have any relationship with the level of environmental disclosure content-quality.

Having developed a framework of environmental disclosure content-quality and hypotheses for the thesis so as to guide the empirical investigations, the next chapter explains and justifies the methods used.



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CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

The main aim of this chapter is to provide a detailed description of the research methodology applied for the study. It includes the overall review of the research design, sampling plan, data sources and collection methods, dependent and independent variables operational definitions and measurements, research instruments' validity and reliability, research model, data coding, and analytical methods. Discussing these aspects aims to provide a better understanding of the research approaches, methods and techniques employed as an attempt to enhance the value of the research methodology adopted for this study.

4.2 Sampling Procedures

Sampling refers to the use of a small number of items or parts of a large population in order to reach conclusions of the whole population. There are two main categories of sampling methods namely probability sampling and non-probability sampling. Deciding whether probability or non-probability sampling technique is to be used for a research will depend upon nature of research, research methodology and research goal (Dawson, 2007; Hair, Money, Samouel, and Page, 2007; Sekaran, 2003).

For qualitative researches, non-probability sampling techniques are appropriate and usually adopted by the researchers, whereas probability sampling techniques are appropriate techniques and usually used for quantitative researches (Hair, *et al.*, 2007). Where the researcher seeks to describe or explain what is happening within a

smaller group of people or subjects, and the generalization of results to the whole research population is not the goal, non-probability sampling technique is appropriate. On the other hand, the probability sampling technique is appropriate for quantitative researches, and when the researcher aims to explain, predict or generalize results to the whole research population (Dawson, 2007; Hair, *et al.*, 2007).

This study aims to determine the factors that influence the environmental disclosure content-quality of oil and gas companies of developing countries. This is done by investigating the hypothesized relations between several predictor variables and the environmental disclosure content-quality, using data collected from sample of oil and gas companies in developing countries. Results drawn from survey of oil and gas companies to be generalizable to the whole population (i.e. oil and gas companies in developing countries) entails that the sample should be representative of the target population. In this case, the probability sampling is suggested as an appropriate approach (Sekaran, 2003). As probability sample strengthens the study outcome representativeness, and hence enabling inferences to be obtained from the study population within a reasonable error margin (Diamond, 2000; Sapsford, 1999). Thus, based on the above discussion, the probability sampling is seen as appropriate sampling technique for this study. Probability sampling includes different techniques, which are simple random sampling, systematic sampling and cluster sampling.

For the purpose of this study, cluster sampling technique is adopted. This type of sampling refers to a sampling method where the main sampling unit is a large cluster rather than an individual element (Zikmund, 2000). In other words, in cluster

sampling, a group of population elements or a cluster is the sampling unit (Ahmed, 2009). The selection of such technique of random sampling is justified in the following paragraphs.

Despite some disadvantages inherent with cluster sampling method that it is the least reliable and efficient among all probability sampling methods (Ahmed, 2009; Sekaran, 2003), this method is preferred because it is an economically less expensive than most other probability sampling designs and the least dependable (Bluman, 2009; Sekaran, 2003; Zikmund, 2000).

This sampling technique is used when natural groupings are evident in a statistical population. Cluster sampling is suitable for survey of institutions, and when sampling frame is available at cluster level (Ahmed, 2009). In addition, Zikmund (2000, p 394) argued that "when population elements are unequally distributed geographically, a cluster sampling may become much more attractive". It is also suggested as an appropriate method when no list of the population elements is available (Sekaran, 2003; Zikmund, 2000). Accordingly, as there is no complete list of oil and gas companies in developing countries, and oil and gas companies are unequally distributed between developing countries, and for several advantages of cluster sampling mentioned above, cluster sampling in its form of geographic area (political boundaries) was chosen for the purpose of this study.

There are three types of cluster sampling, namely, single-stage cluster, two-stage cluster and multi-stage cluster sampling. The first type entails the categorization of the population into clusters, where the required number of clusters is randomly

chosen as sample subjects and the entire elements in each of the cluster is considered. In the second type, a random sampling method is employed to each of the selected clusters elements and finally in the third type, sampling entails many phases where more than two steps are involved in cluster selection (Hoshaw-Woodard, 2001).

Specifically, in cluster sampling technique, the total population is divided into groups (clusters) and a sample of the groups is selected. Then, every element in these groups may be selected (Single-stage) or a subsample of elements may be selected within each of these groups (two-stage or multi-stage).

To select sample by using cluster sampling technique, several steps are to be followed, they are; a) define the cluster characteristics in a way that ensures the clusters are unambiguously identified in the target population, b) decide on how many clusters to sample, c) choose the cluster(s) in a random manner, d) obtain a sampling frame for the chosen clusters, e) decide whether to conduct a census on the chosen cluster(s) or whether to take a probability sample from the cluster(s), and f) if a probability sample is desired, determine the total sample size (Hair, *et al.*, 2007). Following this guide the sample of this study was drawn as follows:

First, cluster characteristics were well defined to ensure that the clusters are unambiguously identified in the target population. In practice, however, clusters are often defined based on geographic regions or political boundaries (Hoshaw-Woodard, 2001). Geographic area sampling is a form of cluster sampling (Sekaran, 2003). The geographic area or political boundaries sampling is the most frequently used form of cluster sampling (Hair, *et al.*, 2007). Thus, as the target population of

this study is oil and gas companies in developing countries, the developing country is chosen as a cluster.

There are different classifications for economies of the world, such as United Nations Development Programme (UNDP) classification, International Monetary Fund (IMF) classification, and World Bank (WB) classification. In this study, the United Nations Development Programme (UNDP) country classification system is used, as it is a comprehensive classification system¹⁴. It considers achievements in three dimensions, namely, longevity, education and income (Nielson, 2011). Thus, for the purposes of this study, the term “developing countries” refers to countries classified by the UNDP as developing countries based on their level of development in 2010. These countries are characterized by low life expectancy; low level of literacy and low income level (Nielson, 2011).

The list of developing countries, according to UNDP's country classification system, who are members of the World Petroleum Council (WPC) was selected as a sampling frame for primary (clusters) sample. This list was chosen as the WPC is the premier global petroleum forum and is the only international organization representing all aspects of the oil and gas industry. The organization has more than 65 (38 of them are developing countries) member countries belonging to all five continents of the world. It is UN accredited organization, as well as is the foremost petroleum organization in the world today, as it constitutes over 95% of the world's

¹⁴The UNDP's country classification system is built around the Human Development Index (HDI). The HDI is a composite index of three indices measuring countries' achievements in longevity (measured by life expectancy at birth), education (measured by a proxy constructed by combining measures of actual and expected years of schooling) and income (measure by gross national income per capita). In addition, although, the three international organizations approach the construction of development taxonomies very differently, but the classification systems are quite similar in terms of designating countries as being either developed or developing (Nielson, 2011).

oil and gas consumption and production (<http://www.world-petroleum.org/>). Thus, developing countries - according to UNDP classification of 2010 (available on <http://www.un.org/en/>) - that are members of the WPC (as available on <http://www.world-petroleum.org/>) comprise 38 countries.

Second, to select a sample, industry associations' membership databases can be used as a sampling frame (Van der Steden, Young and Chen 2007). Thus, to decide on how many clusters to be sampled, list of developing countries who are members of the World Petroleum Council (WPC) was selected as a sampling frame for primary (clusters) sample. The list of developing countries (38 countries) according to UNDP classification of 2010 that are members of WPC at the end of 2010 was obtained. Then, half of this list (19 countries) was selected to be a cluster sample for this study.

Third, nineteen developing countries were chosen randomly. To choose cluster samples in a random manner, the researcher may select clusters referred to as primary sampling units (PSU) by using a specific sampling technique, such as, simple random sampling (SRS), systematic sampling or by probability proportional to size (PPS) sampling (Ahmed, 2009).

In this study, simple random sampling method is used. For this purpose, traditional techniques can be used. This entails numbering each element of the population, placing the numbers on cards, and then placing the cards in a hat or fishbowl, mixing them, and then selecting the sample by drawing cards as needed. This method has been criticized as there is a chance of obtaining a biased sample because it is possible that the numbers are not mixed well, and the numbers chosen for the sample are

those that were placed in the bowl last. To overcome this limitation of using hat or bowl, the preferred method to selecting a random sample is to use random numbers. Random numbers can be generated by calculators, computers or tables (Bluman, 2009). Recently computer software packages are used to facilitate drawing random sample procedure and ensuring unbiased sample (Bluman, 2009; Hair, *et al.*, 2007).

For simple random sampling (SRS), numbers were assigned to each countries listed in previous step. Then a random sample of nineteen countries was generated by computer software called "Research Randomizer" (as available on <http://www.randomizer.org/form.htm>).

Fourth, a sampling frame for the chosen clusters is obtained. According to Hair *et al.* (2007), in practice there may not be an exhaustive list of elements of population, so researchers can use one or more lists that provide a good proxy for the population – a proxy that forms the sampling frame from which the researcher draws the sample. Particularly, Ahmed (2009) argues that, in cluster sampling more than one sampling frame might be involved. Thus, as there is no complete integrated list for oil and gas companies in developing counties or for the whole world, so sampling frame for selected countries was obtained by combining different lists of oil and gas companies belonging to developing countries.

Once the sampled countries are selected, the process of selecting the sample companies began by searching through the selected countries for the names of the petroleum companies listed on the Subsea Oil & Gas Directory (available at <http://www.subsea.org>), Everything Oil and Gas Directory (available at

<http://www.everythingoilandgas.com>), Directory of oil and gas websites (available at <http://www.oilgas.co.uk>), Goliath Business Knowledge on Demand (available at <http://goliath.ecnext.com/>), Oil & Gas Directories (available at <http://www.pennenergy.com>), and Manta Directory (available at <http://www.manta.com/world/>)¹⁵. All companies from each previously chosen country were initially sampled. Thus, the initial sampling frame consists of 207 oil and gas companies in the selected developing countries. Finally, it was decided to conduct a census on the chosen clusters.

A researcher may select all secondary sampling units (SSU) for convenience or few by using a specific element sampling technique, such as, simple random sampling, systematic sampling or by probability proportional to size (PPS) sampling (Ahmed, 2009). Single-stage cluster method, where a list of the units in the population is only needed for those clusters that are selected (Hoshaw-Woodard, 2001), was chosen for this study.

Single-stage cluster sampling involves selecting all secondary units (elements) to be included in the sample. Thus, all oil and gas companies included in the sampling frame as mentioned above were selected as initial sample. Thereafter, companies were surveyed to find out whether they have websites or not. For this purpose, in addition to abovementioned websites, popular search engines such as Google, Yahoo, MSN, were used. If a company has a website, further search was carried out to explore whether it publish annual reports and stand-alone reports on its website or

¹⁵ This method has been used by prior research (cf. Abdul Aziz and Lee, 2007).

not, if it has these reports, they, as well as, environmental related sections on homepage were downloaded.

However, final sample companies was drawn after excluding ninety one companies from the list owing to non-availability of/or inaccessible or non-English websites, non-availability of annual reports and/ or stand-alone environmental reports and missing data. Table 4.1 provides the sample attrition. Of the 207 companies, eleven companies had no websites, 7 companies had websites but were not accessible (e.g., websites under construction), 28 companies had websites but in a non-English language, 36 companies had websites but their annual reports and/or stand-alone reports are not available or inaccessible online, 9 companies had missing data. Thus, the final sample for this study consists of 116 companies across 19 developing countries as reported in Appendix 2.

Table 4.1
Companies Sample Deduction

| | | |
|------------------------|--|------------|
| Initial Sample: | Oil and gas companies headquartered in selected countries | 207 |
| Less: | Companies have not Websites | 11 |
| Less: | Companies with inaccessible Websites | 7 |
| Less: | Companies with non-English Version Websites | 28 |
| Less: | Companies that their annual report, stand-alone reports were not available or inaccessible online. | 36 |
| Less: | Companies with missing data | 9 |
| Final Sample | | 116 |

Inferences are made based on statistics concerning the population on a sample base (Zikmund, 2000). Hair, Black, Babin, Anderson & Tatham (2006) claimed that in multiple regression analysis, the size of the sample is a significant aspect as it

impacts the statistical strength of the significance testing and the outcome generalizability. To ensure this is so, sample must be large otherwise it is not a representative (Cooper & Schindler, 2001, as cited in Mustapha, 2009). But the issue is, how large is large? (Mustapha, 2009). A number of rule of thumbs are introduced in determining the sample size. For example, Roscoe (1975) established that a samples size between 30 and 500 are suitable and the sample size should be several times (preferable 10 times or more) as large as the variables in multivariate research, with the inclusion of multiple regression analysis. Similarly, Hutcheson and Sofroniou (1999) stated that 10 samples are required for every variable. According to Hair *et al.* (2006), a general rule for sample size is that the minimum ratio of observations to independent variables is 5:1, and the recommended level range from 15-20 observations for each individual independent variable. They added that for majority of cases, sustaining strength at 0.80 in multiple regression calls for a minimum sample of 50 observations, but 100 is recommended.

As the equation in this study has twelve variables, and based on the above discussion, the sample size is considered reasonably appropriate. Thus, a sample size of 116 is very close to the preferable level of 120 (10 observations \times 12 independent variables), as suggested by Roscoe (1975), and Hutcheson and Sofroniou (1999). The sample size also satisfies the minimum requirement of 60 samples (the minimum ratio of observations to independent variables is 5:1) and also satisfies sample size for sustaining strength at 0.80 in multiple regression (100 observations) as recommended by Hair *et al.* (2006). Thus, the sample size for this study meets minimum requirements and very close to the desired levels of the rule of thumbs

suggested by different authors as discussed above. Stated differently, the study sample seems to be large enough to represent the population.

4.3 Data Collection

As in disclosure literature, this study employs secondary data approach. To obtain the required information, secondary data is collected using a cross-section by content analysis technique. The three reporting mediums, namely annual reports, stand-alone reports (environmental or health, safety and environment reports, social responsibility reports, sustainability reports) and corporate homepages were analyzed and the related information was gathered.

4.3.1 Data Sources

The main objective of the present study is to examine environmental disclosure in different mediums. The companies may use a number of mediums such as annual report, environmental report, social responsibility report, sustainability report, corporate homepage, advertisements, articles, brochures, booklets, newspaper and magazine, CD reports, television and radio, video tapes, to communicate their environmental information (Aburaya, 2012; De Villiers and Van Staden, 2006; Halme and Huse, 1997; Peiyuan, 2005; Tilt, 1994; Williams and Pei, 1999; Yuen and Yip, 2002; Zeghal and Ahmed, 1990).

In this regards, the question that arises is what mediums should be examined? It was argued that focusing on a certain medium of reporting for examination of environmental disclosure practices may lead to an unclear and imprecise picture on the actual state of environmental disclosure practices (Alias, 2001; Buhr, 1994; Buhr

& Freedman, 2001; Roberts, 1992; Zeghal & Ahmed, 1990). Thus, all organizational communications should be monitored in order to have an overview of the entire aspects of corporate external reporting (Guthrie *et al.*, 2004). But practically, capturing all communications in different documents of a company may be problematic, as it is not possible to identify the full range of disclosure mediums (Zeghal & Ahmed, 1990). Thus, it is impossible to ensure that all communication means have been identified (Gray *et al.*, 1995a; Gray *et al.*, 1995b). Supporting this, Silva (2008) argued that while a more comprehensive consideration of environmental reporting may be needed, it is difficult for a researcher to identify all sources of company communication. Considering these arguments, the researcher is of the opinion that to achieve the objective of determining a clear and imprecise picture on the actual environmental disclosure practices and making it practically possible, a study has to cover the main mediums of environmental disclosure. Thus, this study covers the main mediums of environmental disclosure, particularly, annual reports, stand-alone report (i.e. environmental reports, social responsibility reports, sustainability reports), and corporate homepages.

Choosing these mediums is based on the argument that communication of environmental information can be either in the annual report, in a stand-alone environmental report, on the company website, or in a combination of these mediums (Brady, 2005), and argument that with the exception of the utilization of distinct environmental reports or the website of the company, other forms of reporting media are not extensively employed in addition to the annual report (Tilt, 2001a). According to KPMG (2008), the main vehicles of disclosing corporate responsibility information (including environmental information) that are within the public domain

information followed by stand-alone report and internet web pages. As well as, it is believed that, the annual reports and sustainability reports (or equivalent) as are annual reports, corporate environmental, corporate responsibility, sustainability reports, and company websites. As such, only environmental information available in mediums that are publicly published, namely annual report, environmental reports and/or social responsibility report and/or sustainability report¹⁶, and corporate website, were used.

Selecting of these three reporting media made also based on the findings of literature which shows that, annual report, separate environmental report and company web site are important mediums for disclosing of environmental information (cf. Adams and Frost, 2004; Clarkson *et al.*, 2008; De Villiers and Van Staden, 2012; Gray *et al.*, 1995b; Van Staden and Hooks, 2007). Ramdhony *et al.* (2010) which pointed that the annual report is the most common medium used to disclose environmental information followed by stand-alone report and internet web pages. As well as, it is believed that, the annual reports and sustainability reports (or equivalent) as contained on company web sites is the most likely place that stakeholders and parties interested in environmental disclosure would seek and obtain information (Choi *et al.*, 2013; De Villiers and Van Staden, 2011a). Vuorela (2014) also pointed that annual reports, sustainability reports and the internet are ways for companies to present their corporate social responsibility.

Unlike the majority of previous studies that primarily focused on conventional print media as disclosure mediums, this study focuses on internet-based reports. Thus, annual reports and stand-alone reports were obtained from the websites of firms, assuming that the internet has become crucial medium of both corporate public

¹⁶ Following previous studies (e.g. Haddock-Fraser & Fraser, 2008), stand-alone reports (environmental report, social responsibility report, and sustainability report) altogether or whatever is available were covered by this study.

relations and provision of information, and the modes of environmental reporting have changed from hardcopy to internet reporting (Adams & Frost; 2004; Campbell & Beck, 2004; Haddock-Fraser & Fraser, 2008; Kotler & Lee, 2005; Yusoff and Othman, 2013).

Prior research has shown that the content of hard copy reports and those released on the internet are the same. For example, Razeed *et al.* (2004) compared 12 random samples of hard copy annual reports with internet counterparts and revealed that the former were replicas of the latter. Other prior studies (e.g. Brennan & Hourigan, 1998; Debreceeny, Gray, & Rahman, 2002) noted that the online corporate reports are mainly replicas of hard copy annual reports in electronic format.

In addition, previous studies (e.g. Gray 2001; Lymer, Debreceeny, Gray, & Rahman, 1999) indicated that companies frequently include downloadable versions of their annual reports in an Adobe Acrobat Portable Document Format (PDF) files. The PDF format is popular and easy to create from original documents, and provide an exact duplicate of the printed annual reports (Barac, 2004). Moreover, these files are safe, as it is difficult to alter their documents (Bagshaw 2001, as cited in Barac, 2004, p. 11). Jenkins and Yakovleva (2006) revealed that the top 10 international mining firms develop corporate websites containing information of their social and environmental activities with downloadable PDF drafts of their annual reports and reports on such activities. However, practically, it is difficult to obtain hard copy reports of companies located in different countries.

Based on the above, the mentioned reports were retrieved from corporate websites of sample companies. This approach is consistent with a number of previous empirical studies (e.g. Aerts, Cormier & Gordon, 2006; Ahmad and Haraf, 2013; Barac, 2004; Bayoud *et al.*, 2012; Choi *et al.*, 2013; Comyns and Figge, 2015; Cuesta and Valor, 2013; Eljayash *et al.*, 2012; Eljayash *et al.*, 2013; Gray 2001; Haji, 2013; Lymer *et al.*, 1999; Michelin *et al.*, 2015; Setyorini and Ishak, 2012). The corporate homepages were also scanned to retrieve environmental-related information disclosed on related sections. The financial year ends at December 31, 2010, or the financial year ends at June 30, 2010, or the financial year ends at March 31, 2011, depending on an end of a company's financial year, was chosen for the research. The determining factor for choosing the year is to choose the most recent year available at the outset of this study, thus, the year 2010 was the most recent year at the study stage of development. However, in case the reports of the year 2010 are not available, following prior research (cf. Khan, 2006), the latest reports available on company website will be used. To get the reporting mediums covered in this study (i.e. annual reports, stand-alone reports and homepages sections contain additional environmental disclosure), websites of the selected companies were browsed through November–December, 2011, and related files were downloaded.

Due to the timing difference, it is possible that, information is no longer available on the current website. For validation purposes, (to identify any information that is possibly no longer available on the current website) previous studies (cf. Eakpisanakit,

2012) used the Internet Archive: Wayback Machine tool¹⁷ to trace company websites as they were at a specific date.

In this study, since the period of downloading is through November-December 2011, while the year of analysis is 2010, the Internet Archive Wayback Machine was used as tool to trace company websites and identify any information as at the 2010 financial year end date (or at the closest date available). Thus, using this software, the environmental information on the related sections on the company's homepages was extracted as released on the day of the release of that company's annual report and stand-alone report. This procedure helps to increase reliability and to control for potential fluctuations due timing differences when comparing results based on website information relative to that in corresponding annual reports and stand-alone reports (Williams and Pei, 1999). The information needed to create independent variables of this study was also obtained from these sources.

4.3.2 Data Collection Method

To achieve the study's objectives, related information has to be gathered. Accordingly, environmental and other related information were collected. For this purpose a cross-sectional approach and content analysis were applied.

After identifying companies' web sites, annual reports, stand-alone reports and environmental related sections on homepages were downloaded. Content analysis based on environmental disclosure index and scoring scheme (as explained later in

¹⁷The Internet Archive's Wayback Machine is a note site that acts as an internet library of websites, as it puts the history of the World Wide Web. It browses through over 240 billion web pages archived from 1996. It helps to trace websites at any date (or at as close to a date as possible). See (<http://www.archive.org/>).

this chapter) was used in this study, in which each annual report, environmental report and/or social responsibility report and/or sustainability report, and additional environmental disclosure in related sections¹⁸ on corporate homepages of each sampled company were read and relevant data extracted.

4.4 Variables Definitions and Measurements

As shown in Figure 3.2 (research framework), and hypotheses development in chapter 3, a total of 12 hypotheses were formulated in order to explain environmental disclosure quality, regarding i) company size, ii) close to market, iii) ownership concentration, iv) foreign ownership, v) institutional ownership, vi) state ownership, vii) profitability, viii) leverage, ix) multi-nationality, x) environmental certification, and xi) membership of associations/organizations/groups.

The concept requiring measurement should be operationally defined in such a way that specifies how it will be measured (Zikmund, 2000). The following paragraphs describe how each variable is operationalized.

4.4.1 Dependent Variable Definition and Measurement

In this study, environmental disclosure content-quality is measured using a coding instrument that contains disclosure index and disclosure quality scores. As mentioned above, in order to measure a variable, it should be operationally defined. In the context of disclosure, Cooke and Wallace (1989, p. 51) stated that “disclosure is an

¹⁸ As companies attempt to integrate environmental information with other social and sustainability information (Lodhia, 2006b), in addition to environmental section on corporate homepage, sections that carry other names such as social (or corporate) responsibility, corporate citizenship or sustainability were also analyzed. Other areas and sections in the web site that were though might include related information were also reviewed. As well as the search facility on the website was used to search for related key words (Kamla and Rammal, 2013; Paisey and Paisey, 2006).

abstract concept that cannot be measured directly". To be measured, an abstract concept should be operationalized by reducing and rendering them measurable in a tangible way (Sekaran, 2003).

Although accounting literature has given a considerable attention to the definition of 'disclosure', there is no uniformity in its definitions (Burrirt, 1997). For example, environmental disclosure was defined by Burrirt and Welch (1997) as "a passage of writing on an environmental issue, underneath a section heading in an annual report" (p. 75). But this definition was criticized by Burrirt (1997) as being conservative. Environmental disclosure also was defined as "information about the environmental impact and efforts in terms of their relationship with the reporting entity" (Manasseh, 2004, p. 24). Other authors defined environmental disclosure as "those disclosures that relate to the impact company activities have on the physical or natural environment in which they operate" (Wilmshurst & Frost, 2000, p. 16). It was also defined as "the set of information items that relate to a firm's past, current and future environmental management activities and performance" and "information about the past, current and future financial implications resulting from a firm's environmental management decisions or actions" (Berthelot *et al.*, 2003, p. 2). Environmental disclosure is also defined by Kuo and Chen (2013) as "a set of information items that relate to a firm's past, current, and future environmental management activities and performance" (p. 1467), and by Yusoff and Othman (2013) as "any written passage about company's environmental issue and activity" (p. 1720).

For the purpose of this study, environmental disclosure is defined as a process of communicating the information on environmental issues through various reporting

mediums including; annual report, separate stand-alone environmental-related reports (i.e. environmental report, social responsibility report, sustainability report), and corporate homepage of Internet. Thus, the dependent variable of this study refers to the content-quality of environmental disclosure through various mediums including annual report stand-alone reports (whatever the name of the report is, i.e. environmental report, corporate responsibility report, social responsibility report, corporate sustainability report, social and environmental report, health, safety and environment report, corporate citizenship, etc.), and additional information on corporate homepage (i.e. environmental related section(s) on homepage).

4.4.1.1 Content-quality Construct

Content-quality is an abstract concept that needs to be operationalized (Silva, 2008). According to Silva (2008), content-quality often referred to as the concept of reporting quality. He criticized that such referring is incorrect, as the reporting quality is a broader concept. Silva thus suggested that to measure each concept (i.e. content-quality and reporting quality) correctly, the distinction between the two concepts should be made.

Silva (2008) reported that reporting quality has been measured by several constructs including adequacy, comprehensiveness, informativeness, and timeliness, whereas content-quality can be appropriately tested through a measure that determines and considers the significance and meaning of the content and through examining its issue coverage. This can be successfully carried out through the categorization of information based on theme and confirming the comprehensiveness via the message depth. Several studies like Freedman and Stagliano (1992), Freedman and Wasley

(1990), Hall (2002), Ingram and Frazier (1980), Walden and Schwartz (1997) and Wiseman (1982) have employed this method in their works.

Table 4.2
Dimensions Used in Prior Studies on Reporting Quality

| Study | Evidence | Specificity | Timeframe | Effect |
|-----------------------------------|---|---------------------|---------------------------|--------------------------------|
| Silva (2008) | Monetary Quantitative/Non-monetary Qualitative | Specific General | Future Present Past | n/a |
| Ingram and Farazier (1980) | Monetary Non-monetary Qualitative Declarative | Specific General | Future Present Past | n/a |
| Wiseman (1982) | Monetary or quantitative Non-quantitative | Specific General | n/a | n/a |
| Cormier, Gordaon and Magnan(2004) | Monetary or quantitative Non-quantitative | Specific General | n/a | n/a |
| Zeghal and Ahmed (1990) | Monetary or quantitative Non-quantitative | Specific General | n/a | n/a |
| Hughes, <i>et al.</i> (2001) | Monetary or quantitative Non-quantitative | Specific General | n/a | n/a |
| Freedman and Wasley (1990) | Monetary or quantitative Non-quantitative | Specific General | Future Present Past | n/a |
| Freedman and Stagliano (1992) | Monetary Non-monetary | Specific General | Future Present Past | Significant Not significant |
| Walden and Schwartz (1997) | Quantified Not quantified | Specific General | Future Present Past | Significant Not significant |
| Hall (2002) | Monetary quantitative Non-monetary quantitative Declarative | n/a | n/a | n/a |

Sources: Adapted from Cormier *et al.* (2004), Hughes *et al.* (2001), Silva (2008), Zeghal and Ahmed (1990)

The literature points out that the dimensions most commonly used to measure quality of environmental disclosure are those suggested by Wiseman (1982), namely, evidence and specificity, which were widely adopted by many pertinent studies (e.g. Cormier *et al.*, 2004; Hughes *et al.*, 2001; Kuo and Chen, 2013; Sulaiman *et al.*,

2014; Zeghal & Ahmed, 1990). For the purpose of this study and following Wisemans (1982) scoring system, which is the most common scoring system used by prior studies, the content-quality construct distinguishes content-quality on the basis of the two dimensions of evidence (monetary or quantitative, non-quantitative) and specificity (specific, general). Content-quality construct, its dimensions and their element items are summarized in Table 4.3.

Table 4.3
Content-quality Construct

| Dimension | Element Item |
|------------------|---|
| Evidence | Quantitative (Monetary or non-monetary) Non-quantitative/Qualitative |
| Specificity | Specific General/ Not specific |

Source: Adapted from Ingram and Frazier (1980, pp. 620-621) and Silva (2008, p. 77)

To measure content-quality of environmental disclosure, this study adopts content analysis technique using coding instruments (environmental index, content-quality dimensions, and decision rules) developed from the pertinent prior studies. Content analysis and instruments used are explained in following sections.

4.4.1.2 Environmental Disclosure Content-Quality Measurement Technique (Content Analysis)

Content analysis refers to a method that codifies the text or the content of writing into different categories according to established criteria (Weber, 1988, as cited in Alias, 2001, p. 26). It is "a research technique for making replicable and valid inferences from data to their context" (Krippendorff 1980, p. 21). Content analysis is also defined as "a process of turning the content of documents or other media into 'precise, objective, quantitative data'" (Neuman, 2000, p. 294). Among the more common definitions of content analysis is that of Abbott and Monson (1979), which is probably the most widely quoted in the CSR literature. Abbott and Monson (1979)

defined content analysis as "a technique for gathering data that consist of codifying qualitative information in anecdotal and literary form into categories in order to derive quantitative scales of varying levels of complexity" (p. 504).

Content analysis is well-established and widely used in the social science literature (Abd Rahman *et al.*, 2011; Aburaya, 2012; Ahmad and Haraf, 2013; Beattie *et al.*, 2004), particularly in CSRR/CER studies (cf. Adams *et al.*, 1998; Bayoud *et al.*, 2012; Campbell, 2004; Cowen *et al.*, 1987; Das *et al.*, 2015; Deegan & Gordon, 1996; Deegan & Rankin 1996; Elena, 2014; Eljayash, 2015; Eljayash *et al.*, 2012; Eljayash *et al.*, 2013; Freedman & Jaggi, 1988; Hackston & Milen, 1996; Harun *et al.*, 2013; Hewaidy, 2016; Kamla, 2007; Kamla and Rammal, 2013; Kansal *et al.*, 2014; Kuo and Chen, 2013; Oba and Fodio. 2012a,b; Pahuja, 2009; Patten 2002a; Said *et al.*, 2009; Sulaiman *et al.*, 2014; Trotman & Bradley 1981; Wiseman, 1982; Zeghal & Ahmed, 1990).

Several advantages of using content analysis are listed as follows:

1. Content analysis is a non-reactive or unobtrusive technique, as the object of the study behaves naturally (Krippendorff, 1980). By using content analysis technique, effects of non-response, interviewer and social desirability bias inherent with questionnaire and interview techniques can be avoided (Neuman, 2000).
2. Content analysis technique is invaluable where in the information that the researcher seeks is available in various media like annual reports, advertisements, press releases, verbal statements and websites (Cowan, 2007; Krippendorff, 1980).

3. Content analysis technique enables the researcher to investigate, beyond the number of times a particular phenomenon occurs, the underlying meaning or context of the material being examined (Krippendorff 1980).
4. Content analysis facilitates analyzing large quantities of data across a variety of mediums (Cowan, 2007).
5. Content analysis is a reasonably cost analysis type where data can be measured objectively, reliably and systematically (Krippendorff, 1980).

There are two approaches of content analysis, namely, quantitative (extent-based) content analysis approach and qualitative (quality-based) content analysis approach.

Quantitative content analysis is concentrated on the quantitative aspects of disclosure including the extent and volume using various measures such as number of words, sentences, lines and pages, whereas the qualitative analysis goes over the volume and extent of disclosure and concentrates on the qualitative aspects like disclosure contexts, their meanings and what they imply¹⁹ using a quality index (Belal, 2008; Hooks and van Staden, 2011). While most studies that explored corporate social and environmental disclosures measured the extent and volume of disclosures via quantitative content analysis using a checklist of items that capture the amount and variety of disclosure (Michelon *et al.*, 2015). This approach was criticized as it does not sufficiently determine the quality of information (Michelon *et al.*, 2015). Belal (2008) contended that the qualitative method provides a more robust CSR reporting explanation in comparison to a quantitative method, and qualitative content analysis approach helps develop an understanding of the meaning and significance of social

¹⁹ In some previous studies, attempts were also made to draw inferences about the importance of a disclosure via a count of number of times. Hence, volume indicates the importance of disclosure.

and environmental disclosures made. Therefore, the current study goes beyond the measurement of extent or volume by adopting a qualitative content analysis approach

When using content analysis there are three basic decisions that have to be made (Holsti, 1969):

1. Categories - what is the subject matter (disclosure index constructing)?
2. Unit - what will be the unit of analysis: words, sentences, themes, paragraphs?
3. System of enumeration - will it be frequency, space or intensity?

4.4.1.2.1 Environmental Disclosure Index (EDI)

Index is a composite or multi-item instrument constructed to measure a single concept. Items relating to dimensions of the concept to be gauged are included into a composite measure (Zikmund, 2000). In this regard, the disclosure index (DI) refers to an instrument that consists of a series of pre-selected items that provides a measure when scored indicating the disclosure in the context for which the index was created (Coy, 1995). On the other hand, disclosure index, at its basic form, and through the use of a binary coding system, furnishes an aggregated disclosure quantity measure. Simply stated, the quality of disclosure can be assessed via disclosure index and using scales (Guthrie & Abeysekera, 2006).

There are several advantages for utilization of disclosure index as a measurement technique of disclosure. These advantages include: 1) disclosure index is based on the breadth (number of different topics) and depth (specificity of information provided); 2) it may avoid elements of subjectivity; 3) measurement using index allows researcher to adjust disclosures that are not responsive to other more direct

measure; and 4) using index as a measurement technique is more appropriate for developing countries that generally have low quantity and poor quality of environmental disclosure (Bewley & Li, 2000; Marston & Shrives, 1991; Nurhayati *et al.*, 2006). However, disclosure indices are considered to be a practical and valid research tool to assess, compare and explain differences in the quantity and quality of disclosure, and have been used extensively in the literature (Hooks and van Staden, 2011).

In previous studies relating to environmental disclosure, disclosure index is commonly used to measure the disclosure quality (cf. Aburaya, 2012; Comyns and Figge, 2015; Cormier *et al.*, 2005; Eljayash *et al.*, 2012; Eljayash *et al.*, 2013; Eljayash, 2015; Hassan, 2010; Sulaiman *et al.*, 2014; Wiseman, 1982). An essential issue related to disclosure index is the selection of the items in the index (Hooks and van Staden, 2011). Thus, the first and important step is the selection of items that might be expected to be reported (Das *et al.*, 2015).

There is no general accepted theory that offers guidance on the number and selection of items to be included in a disclosure index (Marston & Shrives, 1991, Tantish, 2003). While existing indices in the literature can be used, most researchers adapt or tailor them to their own perceived needs and to be valid in the particular research environment being investigated (Rizk *et al.*, 2008). In addition to indices of the literature, benchmarks, such as the Global Reporting Initiative (GRI) could be used to build disclosure index for an environmental disclosure study (Hooks and van Staden, 2011).

In the context of social and environmental disclosure, it is suggested that the disclosure lists used as instruments of studies should always be renewed and improved (Murtanto, 2004). However, adjustment of instruments of prior studies helps to reflect differences in research design, and research context.

Thus, for the purpose of this study, and in order to ensure that the index to be used is comprehensive enough to cover existing disclosure practices among oil and gas companies across countries, and is suitable for this industry, Environmental Disclosure Index (EDI), comprising 42 items (see Appendix 3), was adapted based on the following:

1. Wiseman (1982) index was used as a starting point. This is because Wiseman's study is one of the most notable previous studies that are concerned with quality of environmental disclosure (Craswell & Taylor, 1992), and has been commonly used (either as it is or modified) by many related studies (e.g. Alias, 2001; Cormier *et al.*, 2009; Cormier & Magnan, 1999; Cormier & Gordon, 2001; Cormier *et al.*, 2005; Elijido-Ten, 2004; Hossain *et al.*, 2006; Kuo and Chen, 2013; Sulaiman *et al.*, 2014; Yusoff and Othman, 2013; Yusoff *et al.*, 2006).
2. Prior studies were extensively reviewed. Items that have been constantly identified as relevant and which may be disclosed by companies were selected. Following prior studies (e.g. Ahmed, 2004; Bowrin, 2013; Hossain *et al.*, 1994), the inclusion of an item depends on its selection in more than a single prior published research.
3. Wiseman Index was adjusted for other related indices found in the literature (e.g. Alias, 2001; Buhr & Freedman, 2001; Burritt, 1997; Chatterjee and Mir,

2008; Cormier & Magnan,1999; Cormier *et al.*, 2005; Cormier *et al.*, 2009; Elijido-Ten, 2004; Hossain *et al.*, 2006; Islam *et al.*, 2005; Mak *et al.*, 2007; Razeed *et al.*, 2004; Sen *et al.*, 2011; Silva, 2008; Smith *et al.*, 2007; Sustainability Ltd. & UNEP, 1999; Williams, 1999; Yusoff and Lehman, 2004; Yusoff *et al.*, 2006).

4. The above steps resulted in an index of 49 items categorized into eight categories including economic factors, laws and regulations, pollution abatement, sustainability development report (including conservation and management of energy)²⁰, disturbances to land and land remediation and contamination, spills, environmental management, and health and safety²¹. This initial definition of CED categories was tested in the pilot study to determine its relevance for companies in the sample.

²⁰ Although some studies (e.g. Hibbitt, 2003) recommend that if energy is part of the business such as oil exploration and production companies, energy item should be exempted from the index. But in a study that adopts meaning-oriented analysis approach which focuses on the underlying themes (as case of the present study), rather than term itself, a coder can differentiate between a theme that talks about some matters of the business but not environmental matters, and a theme that discusses environmental issues such as energy use, energy policies, energy efficiency, renewable energy and so on. Therefore, the only theme that carries environmental meanings shall be coded, whereas the theme that expresses the company's business itself should be excluded from the coding process.

²¹ There are different opinions as to whether health and safety issues are environmental related issues or not. The difference exists in relation to what 'environment' means (Hibbitt, 2003). Recently, it is common practice for researchers to define 'environment' to include health and safety and product safety issues (cf. Gray & Bebbington, 2001; Gray *et al.*, 1995b; Hibbitt, 2003). Gray and Bebbington (2001, p. 275) argued that "Health and safety issues are 'environmental' in that they deal with part of the organization's effect on (particularly local) environments". Moreover, in practice, many companies report health and safety along with environmental performance measurements (Global Environmental Management Initiative [GEMI], 1998). However, following previous studies (e.g. Gray & Bebbington, 2001; Gray *et al.*, 1995b; GEMI, 1998; Hibbitt, 2003) the study uses the term environmental disclosure to include health and safety information.

5. A preliminary content analysis was conducted on annual reports, stand-alone reports, and homepages of a number of sampled companies (12 companies) that seek current and up-to-date environmental issues and also make it relevant to the oil and gas business environment in developing countries. This method was applied by many previous studies (e.g. Haji, 2013; Hossain *et al.*, 2006; Yusoff & Lehman, 2004). According to this preliminary analysis the index was modified as discussed in section 4.4.1.4 (pilot study) of this chapter.

However, the index used by the current study also similar to indices utilized by recent studies (e.g. Kaur, 2015; Kuo and Chen, 2013; Rupley *et al.*, 2012; Sulaiman *et al.*, 2014).

4.4.1.2.2 Unit of Recording

The selection of recording unit for analysis is an important element of research design in content analysis (Hooks and van Staden, 2011). Content analysis involves turning the content of documents into precise objective, quantitative data (Neuman, 2000). Quantification of the content of documents requires developing a coding system (Krippendorff, 1980), which in turn involves selecting the recording unit to be coded in the analysis, and selecting the unit of measurement²² (or enumeration) with which to quantify the results (Holsti, 1969; Krippendorff, 1980; Cowan, 2007).

Recording unit is "the specific segment of content that is characterized by placing it into a given category" (Holsti, 1969, p. 116). It was also similarly defined as "a specific segment of the context unit in the written material that is placed in a category" (Chatterjee & Mir, 2006, p. 16).

²²The recording unit is that which identifies the themes of interest to the researcher, while the unit of measurement (or enumeration) is to quantify the results (Cowan, 2007).

In prior research of social and environmental disclosure, several units for recording and measurement have been used and discussed. They include words (Deegan & Gordon, 1996; Deegan & Rankin, 1996; Zeghal & Ahmed, 1990), sentences (Abd Rahman *et al.*, 2011; Ahmad and Haraf, 2013; Deegan, *et al.*, 2002; Hackston & Milne, 1996; Harun *et al.*, 2013; Ingram & Frazier, 1980; Michelon *et al.*, 2015; Milne & Adler, 1999; Pled and Iatridis, 2012; Summerhays and De Villiers, 2012; Tilt, 2001a,b), number of pages (Cowen *et al.*, 1987), percentage of pages (Gray *et al.*, 1995a, 1995b; Guthrie & Parker, 1989; Unerman, 2000) and percentage of total disclosure (Trotman & Bradley, 1981).

Words are considered the most reliable unit of recording and measurement for a study concerned with the frequency of a certain word such as “environment” in annual reports, or other mediums of disclosure (Milne & Adler 1999; Neuman 2000). But for a study that aims to determine the underlying themes of disclosure, attention must be paid to the meaning of the disclosures (Cowan, 2007). It was argued that the use of words is not the correct method as comprehending the meaning of individual words in isolation is difficult (Hackston and Milne, 1996; Unerman, 2000), as individual words lack meaning without the context of a sentence (Hooks and van Staden, 2011).

Cowan (2007) argued that recording and/or measurement unit should be selected in consistence with the underlying objectives of content analysis. So in line with the objective of content analysis in this study (i.e. to determine the quality of environmental disclosure), sentences regarding environmental issues have been defined as a recording unit for purpose of content analysis.

Selecting of the sentence as a recoding unit is justified as follows:

1. It was argued that for a study that aims to determine underlying themes of disclosure, attention must be paid to the meaning of the disclosures (Cowan, 2007), and meaning is better captured by sentences (Cowan, 2007; Milne & Alder, 1999). Gray *et al.* (1995b) also argued that sentences are preferred if one is seeking for meaning.
2. Sentences are considered to be more reliable compared to other analysis units as it can overcome issues related with word or page counts occurring because of the variations in font, size of page, graphics and style of writing (Hackston and Milne, 1996; Michelon *et al.*, 2015; Milne and Adler, 1999; and Silva, 2008).
3. A quality per sentence measure was brought forward to assist in distinguishing between companies providing high and low quality disclosure (Hooks and van Staden, 2011).
4. It was argued that "a sentence is easily identified, is less subject to inter-judge variation than phrases, clauses, or themes, and has been evaluated as an appropriate unit in previous research" (Ingram and Frazier, 1980, p. 617).
5. Sentences have been commonly used and proposed as the preferred recording units in social and environmental disclosure studies using content analysis (e.g. Deegan *et al.*, 2002; Guthrie & Abeysekera, 2006; Hackston & Milne 1996; Ingram & Frazier 1980; Milne & Adler 1999; Silva, 2008; Tilt, 2001a; Yusoff *et al.*, 2013).
6. Moreover, the appropriate recording unit in a content analysis process is sentences and therefore they were utilized for the determination and maintenance of meaning (cf. Cowan, 2007; Milne & Adler, 1999).

For this study, and following previous studies, content unit (recoding unit) is defined as any sentence that discusses or mentions any aspect of the natural environment and health and safety that relating to the organization (Gray & Bebbington, 2001; Gray *et al.*, 1995b; Hibbitt, 2003). Images or image captions of environmental activities are not included in the analysis, because if they are, this would entail a significant degree of subjectivity (Ahmed and Sulaiman, 2004; Frost and Wilmshurst, 2000).

4.4.1.2.3 System of Enumeration (Scoring Scheme)

There are three common methods to evaluate disclosure (including environmental disclosure) practices. They are presence or absence method which concerns whether certain environmental related information is disclosed or not; quantity or level method which concerns how large or how frequent the environmental information is mentioned; and quality method that gives attention to the form or type of information disclosed.

The method's presence or absence is deemed to be invaluable in the identification of the mention of environmentally related problems but it overlooks the quantity and quality of environmental disclosure and the specific types of disclosure significance to users (Cowan, 2007). In fact, identifying the presence (mention) of environmental related issues in reporting medium/s is considered the lowest level of analysis. A higher level of analysis considers quantity or level of disclosure but does not consider the quality and importance of disclosure. The highest level of analysis is the analysis that considers the quality of the disclosed information.

However, disclosure indices have been extensively used in prior studies to assess both the quantity and quality of disclosure. While, measuring disclosure quantity (extent) involves use frequency or number of item, the more complex analysis that involves assessing the quality of the disclosure requires using scale (Hooks and van Staden, 2011).

The quality of disclosure has measured in different ways. Some previous studies (e.g. Deegan & Gordon, 1996; Deegan & Rankin, 1996) have suggested the quantity of disclosure as a proxy for disclosure quality. Other studies, such as Schleicher, Hussainey and Walker (2007) and Hussainey and Walker (2009) used the quantity of forward-looking statements as a proxy for disclosure quality. Mouselli *et al.* (2012) used the number of future oriented earnings statements in the narrative sections contained in corporate annual reports as a proxy for disclosure quality.

However, it was argued that some high quality reports could be very concise and focused and therefore not very long, making the proxy suggestion questionable. Therefore, distinguishing between poor and excellent disclosure of items provides a better measure of disclosure than a simple binary record of the extent of an item, or just some measure of the extent of disclosure such as the number of sentences (Hooks & Van Staden, 2011). Other previous studies, for example, Botosan (2004), Aburaya (2012), Chakroun and Hussainey (2014), Alotaibi and Hussainey (2016) used the qualitative characteristics of information as defined by the International Accounting Standards Board (IASB), namely, comparability, understandability, relevance, and reliability (IASB, 1989). Hooks & Van Staden (2011) also used these characteristics (except reliability) to the quality of disclosure in their study.

In prior studies, the most common techniques of content analysis used to determine the quality of disclosure are indexing and weighting scales. For example, Freedman and Jaggi (1988) used a scheme that based on; an item that relates to EPA standards for current emissions and performance of the firm was given the highest score “2.5”, the rating scheme also distinguished between the monetary disclosures and descriptive disclosures (monetary disclosures were given higher scores than the descriptive ones). Moreover, monetary disclosures were weighted based on their relation or lack thereof to past or current (given a score of 1.5), or future capital expenditures (given a score of 2), while, descriptive disclosures were given a score of 0.5. Wiseman (1982) measured environmental disclosure quality by rating based on a score from zero to three, as presented on Table 4.4.

Table 4.4
Wiseman's (1982) Scoring Scheme

| Disclosure type | Weight |
|---------------------------|--------|
| Monetary or quantitative | 3 |
| Non-quantitative specific | 2 |
| General | 1 |
| No disclosure | 0 |

Choi (1999) used a scoring scheme as follows: the highest score “3” is granted to an item expressed in monetary terms, score “2” is granted for an item expressed quantitatively, score “1” is granted for an item expressed qualitatively, while score “0” is granted for a disclosure of a mere opinion or an unsupported declaration regarding the environmental activities of the firm. Belal (2001) classified the disclosure information into three categories as follows: financial information item is given a score of “3”, quantitative non-financial item is given a score of “2”, purely descriptive item is given a score of “1”. Hasseldine, Salama, and Toms (2005) measured quality on a 6 point scale; 0 for nondisclosure to 5 for quantitative data. Cormier and Gordon (2001), Cormier *et al.* (2005) and Lassaad and Khamoussi

(2012) used rating scheme based on a score from zero to three; a score of “3” for an item disclosed in monetary or quantitative information, score of “2” for an item is described specifically, a score of “1” for an item disclosed in general information, and a zero score is assigned when no environmental item is disclosed.

Eljayash *et al.* (2012) measured environmental disclosure quality by rating based on a score of one to three allocated to specific disclosures: score “1” in case disclosure of information is qualitative, score “2” when an item is described in quantitative terms, and score “3” for an item described explicitly in monetary terms. While, Yusoff and Othman (2013) used rating scheme that incorporated four scales allocating a score of four for an item disclosed using a combination of qualitative and quantitative information, three for an item disclosed in quantitative information, two for an item disclosed in qualitative information, one for an item disclosed in general information, and a zero score is assigned when no environmental item is present.

In reviewing the pertinent literature, it is noted that Wiseman’s (1982) weighting scheme is the most commonly and widely used weighting scheme (e.g. Al- Tuwaijri, *et al.*, 2004; Cormier *et al.*, 2004; Cormier *et al.*, 2005; Cowan, 2007; Freedman and Wasley, 1990; Hughes *et al.*, 2001; Kuo and Chen, 2013; Lassaad and Khamoussi, 2012; Zeghal & Ahmed, 1990). In addition, it was argued that Wiseman’s (1982) rating scheme has the following advantages (Cormier & Magnan, 1999): it enables different information types integration into one comparable figure, it has a comprehensive nature as it depends on reading and coding of corporate reports and lastly, it enables the researcher’s impounded judgment in rating the disclosure value.

Using Wiseman's scoring method; the present study appropriates the greatest weight (3) to quantitative disclosures environmental disclosures explained in EDI. This is followed by the next highest weight (2) that is appropriated to non-quantitative but distinct information related to indicators. The lowest weight (1) is granted to general qualitative disclosures. A zero is granted to firms who do not provide information regarding a specific indicator.

Moreover, the total content-quality of environmental disclosure (CQLEDIS) in the three mediums, i.e. annual, stand-alone reports and corporate homepages is measured as the total content-quality score of the three mediums. It should be noted that companies sometimes disclose quantitative and non-quantitative, specific and general information on the same indicator; therefore, the total number of disclosure scores of a company is not necessarily the sum of the total number of quantitative and non-quantitative disclosures.

Prior disclosure literature dealt with repeated information by different ways. For example; Buhr and Freedman (2001) and Guthrie, Petty & Ricceri, (2006) excluded repeated information from the coding process both within a given document and across documents. They argued that redundant information bears no information value. Similarly, Hooks and van Staden (2011) scored the repeated disclosure in the stand-alone environmental reports and the annual reports only once and as such, repeated information did not result in a higher extent or quality score.

Other studies considered the repeated information, for example, in the study conducted by Liu, Taylor and Harris (2006), the repeated words in an annual report

were included in the count. They argued that repetitive words in an annual report strengthened the impact of the information on users.

The third way adopted by the literature is that “any disclosure that is repeated is to be recorded more than once if the evidence, timeframe or specificity of the disclosure differs from the previous recording” (Silva, 2008, p. 229). Consistently, Schneider and Samkin (2008) argued and applied that, if the disclosure of the item is repeated in the same reporting medium or in a different media, it is recorded only once, except in the case where the repeated disclosure covers additional information that enriches the overall quality of the disclosed item.

Following Schneider and Samkin (2008), the score for each item is allocated based on the aggregate disclosure of the item. Thus, the aggregated score of an item is neither simply the sum of scores for every time the item being disclosed (within a medium and across media), nor necessarily the highest of them. Instead, in calculating the total scores of an item, all disclosures in each medium were considered, except for any repetitive information that does not result in the increase in the overall score of a disclosure item. Thus, if the item is worth a score of one (1) the first time it is disclosed and the subsequent time the disclosed item is worth a score of two (2) (or by combining both pieces of information, it is worth 2), we then allocate the higher score (i.e. 2) for the item.

Furthermore, the total content-quality of environmental disclosure in annual reports, stand-alone reports and corporate homepage is measured as the total quality score of the three mediums. The total possible maximum score for the overall environmental

disclosure index is 126 (i.e. $3 \times 42 = 126$). The scores are converted into percentages by dividing the disclosure score of each company to the maximum possible score.

4.4.1.3 Validity and Reliability of the Instrument

To measure quality of environmental disclosure, an environmental disclosure index was developed based on related previous studies. Before using an instrument, the researcher must perform certain essential checks to ensure that the items selected to represent and measure a concept do so in an accurate and consistent manner (Hair, *et al.*, 2007).

It was argued that the success of content analysis as a research technique depends on the reliability and validity of the procedures employed (Krippendorff, 1980; Kuo and Chen, 2013). These analyses allow researchers to evaluate the quality of the instrument used (Cuesta and Valor, 2013). Thus, validity and reliability of the instrument were assessed as discussed below.

4.4.1.3.1 Validity

The purpose of measurement is to measure what is intended to be measured (Zikmund, 2000). To achieve this, a measurement instrument should be valid. Validity refers to the extent to which the instrument is capable of measuring what it is intended to measure (Hair *et al.*, 2007). It is the degree of fit between theoretical constructs and their operational indicators (Nachimas & Nachimas, 1987). In other words, validity refers to whether the measuring instruments used measure the right object or capture the measures that they were intended to measure (Sekaran, 2003). In short, the validity is the ability of an instrument to measure what it is intended to measure (Zikmund, 2000). There are three common types of validity: content validity, construct validity and criterion validity (Hair *et al.*, 2007; Sekaran, 2003).

Following previous studies (cf. Alias, 2011) the current study employed the content validity approach for the validity test.

In this study, the validity of disclosure measurement was examined at two stages. Thus, content validity of the instrument was examined before main analysis of data was conducted (as discussed hereafter in coming subsection), whereas internal consistency was assessed during the statistical analysis of the data as discussed in the next chapter.

4.4.1.3.1.1 Content Validity

Content validity (also called logical validity) means that, the instrument includes an adequate representative set of items that can accurately tap the concept. This type of validity test captures to what extent the measuring instrument provides an adequate coverage of the subject matter (Sekaran, 2003). According to Hair *et al.* (2007), content validity is the assessment of the ability of the scale to measure what it is intended to measure. It is considered to be the professionals' subjective consensus that a scale logically appears to measure what it is intended to in an accurate manner (Zikmund, 2000). This type of validity assists in the determination of clarity and suitability of items and questions and the refining and validation of the study instrument. Before an instrument can be used in a study, it must be checked for content validity (Sekaran 2003; Zikmund, 2000).

A commonly used validation method in business research is consulting a small sample of typical respondents and/or experts to pass judgment on the suitability of the item chosen to represent the construct (Hair et al., 2007). It is claimed that, the

validation can be carried out by a group of experts (Sekaran, 2003). Babbie (1990) contended that the best method of ensuring a valid interrelationship is to conduct a pilot study. Sekaran (2003) and Walsch (1995) provided the evidence types that support content validity; they are the judgment of individuals who develop the instrument or experts in the subject, a detailed conceptualization of the behavioral domain under focus, and finally, in an indirect manner, the high internal consistency reliability. (Krippendorff, 1980).

Following procedures suggested by Sekaran (2003) and Walsh (1995), the instrument validity was supported through three steps. First, the disclosure index's items were operationally defined. Second, the instrument was pre-tested by six experts. And finally, internal consistency reliability was used as an indicator of content validity. According to Sekaran (2003) and Walsh (1995), internal consistency reliability is an indirect way to test a content validity of an instrument, as high internal consistency reliability is evidence of content validity.

4.4.1.3.2 Reliability

This study adopts content analysis to measure content-quality of environmental disclosure. It was claimed that, a key characteristic of content analysis process is that data should be checked to ensure that they are reliable, systematic and objective (Krippendorff, 1980).

Weber (1990) emphasized that content analysis is partly an art and depends on the judgment and interpretation of the investigator. The content analysis subjectivity refers to the fact that the instruments along with data collected by them requires

reliability testing to make sure that the research is objective, it is replicable, and valid inferences can be obtained from data (Hackston & Milne, 1996; Milne & Adler, 1999, Silva, 2008). Consistent with this, Hayes and Krippendorff (2007) argued that conclusions from such data can be trusted only after demonstrating their reliability.

The instrument reliability refers to its ability to provide consistent results each time it is utilized (Zikmund, 2000). It is a measure that shows the level to which it is not biased and thus guarantees consistent measurement throughout time and instrument items. It indicates the instrument measurement of the concept in terms of its stability and consistency (Sekaran, 2003). Moreover, reliability is considered as an assessment of the consistency level between several variable measurements (Hair *et al.*, 2006). A reliable instrument if its repetitive application leads to consistent results. Furthermore, reliability is significant in multi-item scales consisting of several items that represent a single concept (Hair *et al.*, 2007).

Three types of reliability were highlighted by Krippendorff (1980), namely stability, reproducibility and accuracy. Stability involves a test-retest process that assesses the consistency level of a coder in a same data set while reproducibility (inter-coder reliability) involves a test-test procedure that assesses the consistency level between coders within the same data set. Finally, accuracy entails a test-standard process that assesses the consistency adherence to a specific standard (Krippendorff, 1980).

Hackston and Milne (1996), Holsti (1969) and Ingram and Frazier (1980) contended that reliability may be enhanced by using experienced coder, clearly defined categories and coding rules. It is necessary to provide the precise and practical

definition of categories to guarantee the same results would be generated from different coders (Ingram and Frazier, 1980). Additionally, categories must be chosen from the research context (Ingram and Frazier, 1980) and they should clarify the research purpose, be mutually exclusive and independent (Holsti, 1969).

To improve reliability of this study, following previous studies (e.g. Aribi and Gao, 2011; Hackston & Milne, 1996; Milne & Adler, 1999; Silva, 2008), the following steps will be followed:

Well-specified and comprehensive categories, themes, definitions of the themes, and decision rules (coding instructions- see Appendix 4), definitions of the element items in the construct to be examined, were developed based on well-grounded and pertinent prior studies.

Sentences were selected as the unit of recoding. Many authors (e.g. Hackston & Milne, 1996; Milne & Adler, 1999; Silva, 2008) have suggested that sentences are more reliable than other units of analysis.

The choices the coder has to choose at any one time were minimized, thus a minimum number of themes and dimensions related to the environmental information²³ were determined.

Pilot study was conducted to examine the inter-coder reliability of the relevant coding instruments, the coding instruments (disclosure index and scoring scheme) and therefore, discrepancies were determined and resolved.

Main coding process was conducted by one qualified coder (the researcher) to assist in guaranteeing that the consistency of coding is present throughout the

²³The 47 coding choices include the initial coding choice of whether or not the statement is an environmental disclosure, 42 coding choices for environmental themes (see Appendix 3), 2 coding choices for evidence (quantitative, non-quantitative), and 2 coding choices for specificity (specific, general).

entire sample, and to eliminate the gap that may result from the utilization of several coders.

Although, some prior studies (e.g. Boesso & Kumar, 2007) tested the three types of reliability (viz. stability, reproducibility, and accuracy) all together, Beattie *et al.* (2004) argued that as stability is deemed to represent a weak form of reliability, and there is lack of standards, reproducibility is often used as the reported reliability measure. Hayes and Krippendorff (2007) argue that among the types of reliability, reproducibility is the strongest and most feasible type to test. A common way to test reproducibility is by using several coders (called inter-coder test) and ensuring that differences between the coders are few or that differences have been re-analyzed and then solved.

For the purpose of this study, the reliability of disclosure measurement was measured in two stages. First, inter-coder reliability was measured in a pilot study (as discussed below). The second stage involved the examination of the reliability of disclosure measurement using internal consistency (as discussed later in the next chapter).

4.4.1.4 Pilot Study

To confirm the instruments' reliability, a pilot study was conducted. The disclosure index and disclosure quality scores were applied using annual reports, stand-alone environmental reports and environmental related sections on corporate homepages (of year 2009²⁴). Twelve companies were randomly selected for the pilot study.

²⁴ According to Radhakrishna (2007), for purpose of pilot test, data should be collected from subjects not included in the sample. Similarly, Lancaster, Dodd and Williamson (2010) recommended that,

4.4.1.4.1 Validity

A content validity check was carried out on the first draft of the disclosure index by three academicians and three accounting professionals of oil and gas companies. The scoring checklist was sent out to three lecturers in accounting and financial reporting at University of Sana'a, Al-Yemenia University, and International University of Technology Twintech (Yemen Branch), and to three professional accountants and auditors involved in oil and gas industry, who are working in Yemen Branches of three companies included in the study sample (namely Sinopec company, Kuwait Foreign Petroleum Exploration Company, and Korea National Oil Corporation). The participants were requested to review the disclosure item in the index.

Based on the academician and professional experts' feedback, some modifications were made to the original index. For example, an item titled "Health and safety management system" was added to reflect the occupational health and safety management system applied in companies. Two items, namely, financing for environmental equipment, and participation in elaboration of environmental standards, were excluded.

To reflect comments of some pre-test participants that, there was a high level of similarity between some environmental themes, some themes were integrated into others. For example, orders to conform, future legislations or regulation requirements and compliance status of facilities were integrated into environmental legislations and regulations requirements, and item of spills was integrated into environmental incidents. In addition, three themes, namely, activities impacts, products and services

participants in a pilot study should not later be included in the main study. This approach has been applied by previous studies, (cf. Tilt, 2001b). Hence, for this pilot study, data was collected from reports of 2009 (prior to the study year).

impacts and life cycle information, were integrated into one theme, entitled “Activities, products and services impacts on environment”. Therefore, the disclosure index was restructured (see Appendix 3).

4.4.1.4.2 Reliability

This study adopted content analysis using disclosure index and scoring scheme. According to Ingram and Robbins (1992), the selection of the anchor item and the score ascribed to each item is a subjective decision of the researcher.

In order to eliminate or at least minimize subjectivity in scoring adopted in this study, the research instruments were pilot tested. It is argued that the best method of ensuring valid interrelationship is to conduct a pilot study (Babbie, 1990). Pilot study facilitates the discovery of unexpected problems regarding coding and analysis, and administration, and also the testing of the instrument for ambiguous items (Mustapha, 2009).

Thus, before commencing with the coding process, the researcher piloted the coding instruments (index and scoring scheme) using inter-coder procedures. Accordingly, initial coding was carried out by the researcher and an independent coder (Ahmad and Haraf, 2013; Michelin *et al.*, 2015), who possessed a graduate degree in accounting and is fluent in English.

The independent coder provided with the selected reports, a letter of introduction relaying the research topic and objectives, the reason behind the pilot test, and the way the pilot test is to be conducted, the environmental themes along with their

definitions, element items definitions in the content-quality construct, coding guidelines and copies of a recording worksheet (see Appendix 5). These tools were also guiding references for the researcher.

The annual reports, stand-alone reports of the financial year ends at December 31, 2009 (or June 30, 2009 or at March 31, 2010) and environmental related section on homepages²⁵ of 12 randomly selected companies (10% of the full sample²⁶) were used for this purpose. The results of scoring were compared and discrepancies were discussed, reanalyzed, and reconsidered until a consensus results were reached. This method was used by previous studies (e.g. Boesso & Kumar, 2007; Elijido-Ten, 2004; Silva, 2008; Yusoff & Lehman, 2004).

According to the literature reviewed regarding reliability and the detailed investigation into reports regarding content analysis in communication journals, Lombard, Snyder-Duch and Bracken (2002) suggested guidelines for the calculation of inter-coder reliability, including:

1. Select one or more appropriate index/ indices of inter-coder reliability based on the levels of measurement, distribution of the categories and the number of coders.
2. Gather the required tools for the calculation of chosen index/indices.
3. Determine an appropriate minimum acceptable level of reliability.

²⁵ Similar to the main analysis, the environmental information on the related section on the company's homepages was extracted as released on the day of the release of that company's annual report and stand-alone report, using Internet Archive Wayback Machine.

²⁶ This in accordance with Neuendorf (2002) who argued that, the appropriate size of the sample of pilot study should not be less than 50 units or 10% of the full sample.

4. Do not use: only percent agreement to calculate reliability; cronbach's alpha; Pearson's r, or other correlation-based indices that standardize coder values and only measure co-variation; chi-square to calculate reliability; and overall reliability across variables, rather than reliability levels for each variable, as a standard for evaluating the reliability of the instrument.

Using these guidelines, the following steps were conducted:

- Selecting one or more appropriate index/indices

In spite of great effort that researchers, methodologists and statisticians have dedicated to developing and testing indices, there is still no agreement on a particular index of inter-coder reliability (Lombard *et al.*, 2002). According to Lombard, Snyder-Duch and Bracken (2004), there are numerous measures or indices of inter-coder reliability. But only a few are extensively utilized. In the context of communication, the commonly utilized indices include percent agreement, Holsti's method, Scott's pi (p), Cohen's kappa (k), Krippendorff's alpha (a). Hughes and Garrett (1990) argued that for several decades the consensus has been that percentage agreement is an unacceptable estimation approach. One of the most important deficiencies of percentage agreement is that it does not correct for chance agreement among coders. More importantly, researchers dedicated to methodological literature, are of the consensus as to the percent agreement's misleading and inappropriate liberal measure of inter-coder agreement (Lombard, *et al.*, 2004).

Lombard, *et al.* (2004), also stated that, correlation-based indices (e.g. Cronbach's alpha, Pearson's r) are not appropriate for measuring reliability of content analysis, as these indices standardize coder values and only measure

co-variation, while measuring of reliability in the context of content analysis requires an assessment of inter-coder agreement rather than co-variation. Holsti's method was criticized as it does not consider the level of agreement resulting from chance. On the other hand, Cohen's kappa was recommended by prior research and it is commonly used in research (Bakeman, 2000), although it has been criticized by some authors (e.g. Krippendorff, 1987) as its characteristics make it inappropriate as a measure of inter-coder agreement. Chi-square has also been considered as an inappropriate method to calculate reliability (Lombard *et al.*, 2004).

Scott's *pi* and Krippendorff's *alpha* both overcome this problem and thus, are more widely used (Ingram & Frazier, 1980; Milne & Adler, 1999). Hayes and Krippendorff (2007) propose Krippendorff's *alpha* as the standard reliability measure. This index is well regarded and very flexible and can be used for ordinal, interval and ratio level variables (Lombard *et al.*, 2004).

Based on the above and in line with prior studies (e.g. Hackston and Milne, 1996; Milne and Adler, 1999) this study used Krippendorff's *alpha* to assess the level of inter-coder agreement above chance for the initial coding process.

- Obtaining the necessary tools to calculate the index or indices selected.

Indices can be calculated by hand or by automated calculation tools. Calculating indices by hand is a quite tedious task. There are specialized software applications and macros for established statistical software packages available (Lombard *et al.* 2004).

As Krippendorff's alpha requires tedious calculations that are not easy to be done by hand, an automated tool is needed (Lombard *et al.* 2004). Among others, a relatively new online calculator of inter-coder reliability called ReCal²⁷(available on <http://www.dfreelon.org/utills/recalfront/>) was chosen to be used in this study. This is preferred owing to several advantages of this online application, as it is operating system-independent, has general data specifications and provides more reliability coefficients compared to its counterparts, in addition, its functionality has been examined throughout an array of international computer configurations and successfully utilized by users since its public launch in 2008 (Freelon, 2010).

- It was argued that determining an appropriate minimum acceptable level of reliability.

“Defining an *acceptable level of reliability* is one of the many problems in content analysis for which there is no single solution” (Holsti, 1969, p. 142, as cited in Silva, 2008). As there is no generally agreed level of inter-coder reliability that are deemed to be satisfactory, each researcher must choose reliability criteria appropriate to his/her study (Milne & Adler, 1999; Unerman, 2000).

Krippendorff (1980) suggested that inter-coder reliability correlations in excess of 80% should be sought, while Seppanen (2009, as cited in Hassan, 2010) provided the interpretation of the significance of Krippendorff's alpha as:

²⁷ReCal OIR (Reliability Calculator for Ordinal, Interval, and Ratio data) is an online utility that computes inter-coder/ inter-rater reliability coefficients for ordinal, interval, and ratio data judged by two or more coders, it was developed in 2008.

Table 4.5

The Interpretation of the Significance of Krippendorff's Alpha

| K | Interpretation |
|-----------|--------------------------|
| 0 | Poor agreement |
| 0.0-0.2 | Fair agreement |
| 0.21-0.40 | Slight agreement |
| 0.41-0.60 | Moderate agreement |
| 0.61-0.80 | Substantial agreement |
| 0.81-1.00 | Almost perfect agreement |

Source: Seppanen (2009, p. 113, as cited in Hassan, 2010).

Guthrie and Mathews (1985) suggested that 75-80 per cent or above is acceptable. Whiels, Hassan (2010) used the criteria that suggested by Seppanen (2009). It was argued that “higher criteria should be used for liberal indices, such as per cent agreement, and lower criteria can be used with more conservative indices, such as Cohen’s Kappa, Scott’s Pi, and Krippendorff’s alpha” (Hassan, 2010, p. 183).

The annual reports, stand-alone reports and homepages of 2009 were carefully read by the two coders to evaluate environmental disclosure quality. Each coder provided a quality score for every item of environmental disclosure in each reporting medium studied in this study. Therefore, the results were prearranged in the data set-up. Using ReCal OIR, the Krippendorff’s alpha was calculated at the level of each category of CED. Table 4.6 provides the results regarding reliability measures, and Appendix 6 provides a sample of ReCal outputs.

Table 4.6

Reliability of Disclosure Content-quality Measurement

| Category | Krippendorff's alpha |
|----------|----------------------|
| ECONs | 0.957 |
| LAWs | 0.793 |
| POLLs | 0.948 |
| SUSTs | 0.809 |
| DISTs | 0.925 |
| SPILs | 0.859 |
| ENVMAs | 0.853 |
| HSs | 0.839 |

The results in Table 4.6 show a high degree of agreement between the two coders, as the lowest value of Krippendorff's alpha is about 80% (for category of "law" information) which considered as acceptable (Guthrie and Mathews, 1985; Hassan, 2010; Seppanen, 2009). Thus, these results are indicating a good reliability for all variables, and consequently a high degree of reliability in quality measurement procedures. Therefore, the instruments were applied to the main study sample companies.

4.4.2 Independent Variables Definitions and Measurements

As discussed earlier, there are twelve independent variables in this study, they are size of company, type of company, close to market, ownership concentration, foreign ownership, institutional ownership, state ownership, profitability, leverage, multi-nationality, environmental certification, and membership of industry's associations.

The independent variables are defined as follows (summarized in Table 4.7):

4.4.2.1 Company Size

Company size can be measured in different ways. In literature, several measures of size have been used including number of employees, sales volume, total asset value, the market value of the firm, or an index rank Fortune 500 (Choi, 1999). In oil and gas industry, daily production level is used to measure company size. For example, Funk (1999) divided oil and gas companies into four classes, namely, senior producers (majors), intermediate producers, junior producers and non-producing companies. Cooke (1991) argued that no significant reason exists to opt for one and not the other. This contention is supported by Choi (1999) who claimed that no theoretical reason supports a specific measure of size.

Although any one of measures mentioned above is suitable to measure company size, it is not possible to use some of these measures in a study concerning oil and gas companies. For example, Craswell and Taylor (1992) argued that it is not possible to use sales and revenue as a measure of size in a study covers oil and gas companies, as some of them are not yet at the production stage and don't have sales to report.

For the same reason (i.e. unavailability of some measure), production and reserves volume, are excluded from choices of company size measures. Index rank Fortune 500 (as well as, Fortune 1000) does not cover all companies, as it is limited to the first 500 (or 1000) companies, while the population of this study is distributed among different levels. Further, Fortune 500/1000 Index ranks the companies by total revenue, and to be ranked by this index a company is subjected to some conditions, which may not be applicable to a large number of companies in the target population of this study. Thus, the suitable alternatives available for this study are, number of employees, total asset value, or the market value of the firm.

Several past studies made use of multiple measures of company size but there is still no theoretical justification behind the use of a combined measure of the construct (Silva, 2008). Additionally, Hackson and Milne (1996) revealed that employees' number, sales, market capitalization and total assets are significantly correlated and hence, there is little difference in the choice between the different measurements. So, it was decided that a single measure will be used to measure size of company in this study. Total assets measure is one of the common measures used in accounting literature (Wallace & Naser, 1995). Based on this and consistent with many prior

studies (cf. Abd Rahman *et al.*, 2011; Aburaya, 2012; Alias, 2011; Alias, 2001; Ali *et al.*, 2007; Alsaeed, 2006; Barako, 2007; Brammer and Pavelin, 2004; Branco and Rodrigues, 2008; Buhr and Freedman, 2001; Burritt, 1997; Buzby, 1975; Chithambo and Tauringana, 2014; Cormier and Magnan, 2014; Cormier *et al.*, 2009; Darus *et al.*, 2014; Das *et al.*, 2015; Dibia and Onwuchekwa, 2015; Dong *et al.*, 2015; Giannarakis, 2014; Graswell and Taylor, 1992; Haji, 2013; Haji and Ghazali, 2013; Haniffa and Cooke, 2005; He and Loftus, 2014; Kansal *et al.*, 2014; Karim and Ahmed, 2005; Lopes and Rodrigues, 2007; Lu and Abeysekera, 2014; Muttakin and Khan, 2014; Nurhayati *et al.*, 2015; Othman, 2003; Said *et al.*, 2009; Setyorini and Ishak, 2012; Silva, 2008; Sulaiman *et al.*, 2014; and Ying, 2006), this study measures company size by total assets (Log) of a company at the end of a reporting year.

4.4.2.2 Type of Company

As mentioned before, oil and gas industry is characterized by some features such as, high level of uncertainty and risk, high costs, and high level of technology (Baik, 2001; Bindemann, 1999; Kaiser and Pulsipher, 2004). To reduce the risk that involved with oil and gas industry business, oil and gas companies usually jointly acquire petroleum licenses, thus arrangement of joint ventures is commonly applied in oil and gas industry (Wright and Gallun, 2005). Joint venture defined as “the creation between two or more organizations of an entity to carry out a productive economic activity“ (Harrigan 1985, p. 57). It is also defined as "a company created for a particular project and owned by a consortium of other larger oil companies" (Sustainability & UNEP, 1999, p.10).

This study tries to examine whether such arrangement has any effect on environmental disclosure practices. For this purpose, this study classifies companies into two types, namely, single/ individual company and joint venture/ Consortium Company (also called project-based company). Consortium is made up of a group of unrelated firms that combine their forces together and develop oil/gas field for the purpose of commerce, where a particular project is owned by a number of larger oil companies and operated by either a company especially created for this project or by one of the companies combining (contractors) for this project (operator) (Wright and Gallun, 2005).

However, this arrangement, sometimes involve the establishment of a separate entity carrying on a trade of its own (OIAC, 2001). In some cases, a number of companies acquire rights to explore, develop, and produce oil and/or gas by jointly entering into a lease with minerals right owner, but no separate entity is established. Instead, one of the participating firms (operator) is appointed to control the assets and is primarily given the authority to make agreements and incur costs, which can be recharged to the remaining participants (non-operator partners). Thus, the present study distinguishes between two states; minerals rights acquired by an independent single company or by different companies but operated by one elected company under its name (referred to as independent company), and mineral rights acquired by different companies and operated by a separate entity (joint venture/project-based company) established especially for carrying on operations on behalf of different companies constituting consortium enterprise. Thus, type of company is measured by dichotomous variables (0, 1); 1= single company; 0= joint venture/project-based company.

4.4.2.3 Close to Market

The term 'close to market' (C2M), was defined as "being companies that supply goods or services directly into consumer markets rather than supplying to another business entity" (Haddock-Fraser and Fraser, 2008, p. 141). Also, a company that has brands (products labeled with the company name) that are not necessarily supplied directly by the company itself, but via a retailer, is considered close to market (Haddock-Fraser and Fraser, 2008). Thus, Haddock-Fraser and Fraser (2008) differentiated between companies based on, whether the company has retail sales/ activities (RET) or operates on a 'business-to-business' (B2B), and whether the company has brand/s or not. Retail operation or brand name was defined by Jablonowski (2002) as a dichotomous variable that takes one (1) if the oil company possesses retail gasoline sales, and zero (0) otherwise. Similarly, Nurhayati *et al.* (2015) measured brand name as a dichotomous variable where a firm is categorized as a brand name company if it uses a product brand.

Based on the above, close to market can be defined as being the company that supplies goods or services directly into consumer markets or the company that supplies brand name products via a retailer. Accordingly, in this study, each company is examined for the presence of retail sales and/ or brand name in the 2010. Thus, a company takes a score of one (1) if it possesses retail sales of any products of oil and gas (not limited to gasoline) and/or brand name in the 2010 and zero (0) otherwise.

4.4.2.4 Ownership Concentration

In prior studies, ownership concentration was measured using two ways, namely percentage of the shares held by the top shareholders, and percentage of ownership of company held by shareholders holding a certain proportion (mostly 5%) or more of total shareholding. For example; Craswell and Taylor (1992), Barako (2007), and Eng and Mak (2003) used the top twenty shareholders. Hossain *et al.* (1994) and Haniffa and Cooke (2002) measured ownership concentration through the shares percentage of the top ten shareholders while Tantish (2003) measured it by shares percentage owned by the top three proportional to the rest of the issued shares.

Other researchers, for example, Banghoj and Plenborg (2008), Deumes and Knechel (2008), Elijido-Ten (2004, 2007), Htay *et al.* (2013), Kent and Chan (2009), Mustapha (2009), Roberts (1992) and Singh and Davidson (2003) measured the ownership concentration by the percentage of shareholders who own 5% or more of the total shareholding. According to Mustapha (2009), this method is most commonly used to operationalize ownership concentration. Thus, in this study, the ownership concentration is measured by the percentage of shares owned by shareholders with 5% or more of the total shares.

4.4.2.5 Foreign Ownership

Following previous studies (cf. Amran and Devi, 2008; Barako, 2007; Cormier *et al.*, 2005; Haniffa and Cooke, 2002; He and Loftus, 2014; Raithatha and Bapat, 2014; Said *et al.*, 2009), the present study measured foreign ownership by the shares percentage held by foreigners to the total number issued shares.

4.4.2.6 Institutional Ownership

In previous studies, institutional ownership was measured by the percentage of the shares held by the institutional shareholders. For example, Aburaya (2012), Ali *et al.* (2007), Barako (2007), Cormier *et al.* (2005), Htay *et al.* (2013), Lapointe *et al.* (2005) and Raithatha and Bapat (2014) measured this variable by shares percentage held by institutional investors to the total shares issued. Huafang and Jianguo (2007) measured legal-person ownership using proportion of ordinary shares by the legal person. Thus, following prior studies, this study measures institutional ownership by the percentage of the shares owned by the institutional shareholders.

4.4.2.7 State Ownership

Consistent with measurement used by Akrouf and Othman (2013), Haji (2013), He and Loftus (2014), Huafang and Jianguo (2007) and Said *et al.* (2009), state ownership was measured by the percentage of shares owned by the state (value of share owned by the state /total value of shares).

4.4.2.8 Profitability

Both accounting-based and market-based performance measures were used in prior studies. Particularly, the most previous studies measured performance using return on assets (ROA) and return on equity (ROE). It was argued that (see, Elijido-Ten, 2004; McGuire, Sundgren and Schneeweis, 1988; Reverte, 2009) the utilization of accounting-based performance measure is advantageous in that it is free from the perceptions of investor's or market's concerning the ability of the company's future earnings (rather than past performance).

Based on the argument above and similar to previous studies by Abd Rahman *et al.* (2011), Aburaya (2012), Bewley and Li (2000), Bowrin (2013), Brammer and Pavelin (2008), Branco and Rodrigues (2008), Chithambo and Tauringana (2014), Choi *et al.* (2013), Cormier and Magnan (2014), Cormier *et al.* (2004), Cormier *et al.* (2009), Dibia and Onwuchekwa (2015), Dong *et al.* (2015), Giannarakis (2014), Haji (2013), He and Loftus (2014), Hossain *et al.* (2006), Karim and Ahmed (2005), Leary (2003), Lu and Abeysekera (2014), Mohamad *et al.* (2014), Muttakin and Khan (2014), Nurhayati *et al.* (2015), Pahuja (2009), Patten (1991), Othman (2003), Raithatha and Bapat (2014), Roitto (2013), Rupley *et al.* (2012), Said *et al.* (2009), Setyorini and Ishak (2012), Sulaiman *et al.* (2014), Williams (1999), Ying (2006) and Yusoff and Othman (2013) company profitability was measured using its net income on total assets (ROA).

4.4.2.9 Leverage

Leverage refers to the degree to which a firm's financial structure is geared (Karim & Ahmed, 2005). Financial leverage is an extent to which a firm depends on debts to finance itself. Previous studies measured leverage by many measures. For example; Branco and Rodrigues (2008), Craswell and Taylor (1992), Karim and Ahmed (2005), Lopes and Rodrigues (2007), Omar (2008), Pahuja (2009), Tarca *et al.* (2005), Williams (2001), Williams and Pei (1999), Ying (2006), and Zuliana (2007) used debt to equity ratio. Whereas other studies used debt to assets ratio (cf. Ali *et al.*, 2007; Alsaeed, 2006; Barako, 2007; Clarkson *et al.*, 2008; Elijido-Ten, 2004; Haji, 2013; Haneh, 2009).

Multinational company (MNC) is a firm operating in at least two countries (Martinez & Ricks, 1989). MNC is defined by the UN as a company with foreign operations in two or more countries (Gray *et al.*, 1990). MNC is also defined as "A corporation that has its facilities and other assets in at least one country other than its home country. Such companies have offices and/or factories in different countries and usually have a centralized head office where they co-ordinate global management" (Natsvlshvili, 2008, p 7). Similarly, Mustapha (2009) related that companies having foreign operation (investment or sales) are considered as MNCs. However, international experience is created through operations in, and depending on international markets, such experience may also be transferred from parent company to its subsidiaries (Bansal, 2005).

It is argued that market-based measures (such as, debt to equity ratio) rely on investors' perceptions on the future of the company, whereas accounting-based measures (such as debt to assets ratio) rely on past performance of the company and the latter therefore has the advantage of being free from investors' perceptions (Elijido-Ten, 2004; McGuire *et al.*, 1988; Reverte, 2009). For this reason, and following previous studies (cf. Abd Rahman *et al.*, 2011; Aburaya, 2012; Choi, Lee and Psaros, 2013; Cormier and Magnan, 2014; Dibia and Onwuchekwa, 2015; Lu and Abeysekera, 2014; Muttakin and Khan, 2014; Dong *et al.*, 2015), the debt to assets ratio (as an accounting-based measure) at the end of fiscal year 2010 was selected for analysis in this study.

4.4.2.10 Multi-nationality

Multinational company (MNC) is a firm operating in at least two countries (Martinez & Ricks, 1989). MNC is defined by the UN as a company with foreign operations in two or more countries (Gray *et al.*, 1990). MNC is also defined as "A corporation that has its facilities and other assets in at least one country other than its home country. Such companies have offices and/or factories in different countries and usually have a centralized head office where they co-ordinate global management" (Natsvlshvili, 2008, p 7). Similarly, Mustapha (2009) related that companies having foreign operation (investment or sales) are considered as MNCs. However, international experience is created through operations in, and depending on international markets, such experience may also be transferred from parent company to its subsidiaries (Bansal, 2005).

Previous studies measured multi-nationality by various measures. While, some studies measure multi-nationality by percentage of foreign sales (cf. Archambault and Archambault, 2003; Branco and Rodrigues, 2008; Choi, 1999; Lopes and Rodrigues, 2007; Pahuja, 2009), or by number of geographical segments (cf. Depoers, 2000), other studies measured it by the mere existence of foreign sales or operations. For example, Mustapha (2009) measured multi-nationality by a dummy variable. If a company is a multi-national company (MNC) it is coded as one, otherwise as zero. Hossain *et al.* (2006) measured multi-nationality using a dichotomous variable with the value of "1" if the company was a subsidiary of a multinational parent, and "0" otherwise. Similarly, Karim and Ahmed (2005) and Ahmed and Nicholls (1994) measured the influence of a multinational parent by a dummy variable equal "1" if the company is a subsidiary of multinational company and "0" otherwise.

Based on the above, this study measured multi-nationality by using outside operations and subsidiary relation. Thus, a company takes one "1" if it has operations (investment and/or sales) outside its origin country, either by itself or through its subsidiaries/affiliated companies, or being a subsidiary of a parent international company, and zero "0" otherwise.

4.4.2.11 Environmental Certification

Following previous studies (e.g. Eljido-Ten, 2004; Yusoff & Lehman, 2004; Yusoff and Othman, 2013) environmental certification is measured by a dummy variable in which the companies that have ISO 14001 certifications are coded as "1" otherwise as "0". This measure is also similar to the measure that used by Nurhayati *et al.*

(2015), which measured international certification obtained as dummy variable equals 1 if a firm obtained at least one certification such as ISO 14001, ISO 9001, OHSAS 18000, SA 8000 and Oeko-Tex® Certificate and 0 if otherwise.

4.4.2.12 Membership of Industry's Associations

Similar to previous studies, such as, Song and Zu (2009) and Yuan (2007), membership of industry's associations is set in this study as a dichotomous variable, where if a company is a member of an industry's association/organization/group, it is given a score of "1", otherwise "0".

Table 4.7
Summary of Dependent and Independent Variables and Source of Information

| Variables | Acronym | Operationalization | Source |
|---|------------------|--|---|
| Content-Quality of environmental disclosure | CQLEDIS | A weighted measure of the content-quality of environmental disclosure "0-3". Total disclosure score, $3 \times 42 = 126$ | Company's annual reports, stand-alone environmental reports and homepages |
| Company size | SIZE | Logarithm of total assets | Company's annual reports |
| Type of company | TYPSCO | A dummy variable "1" if a company is an individual/single company, "0" otherwise | Company's annual reports and homepages |
| Close to market | CLSMAR | A dummy variable "1" if a company has retail sales and/or brand, "0" otherwise | Company's annual reports and homepages |
| Degree of ownership concentration | OWNCONC | Percentage of ownership of a company held by shareholders holding 5% or more of total shareholding | Company's annual reports |
| Foreign ownership | FOROWN | Percentage of shares owned by foreign shareholders | Company's annual reports |
| Institutional ownership | INSTITOWN | Percentage of shares owned by institutional investors | Company's annual reports |
| State ownership | STOWN | Percentage of shares held by the state | Company's annual reports |
| Profitability | PROFIT | Return on assets (ROA) net income/total assets | Company's annual reports |
| Company leverage | LEV | Ratio of total liabilities to the total assets | Company's annual reports |
| Multinational status | MULTINA | A dummy variable, "1" if a company is multi-national, "0" otherwise | Company's annual reports and homepages |

Table 4.7 Continued

| | | | |
|-------------------------------------|----------------|---|---|
| Environmental certification | ENVCERT | A dummy variable "1" if a company had ISO 14001 certificate, "0" otherwise | Company's annual reports, stand-alone environmental reports and homepages |
| Membership of Industry Associations | INDMEM | A dummy variable "1" if a company is a member of an industry association, "0" otherwise | Company's annual reports and homepages |

4.5 Coding Process

Coding is a “process by which raw data are transformed systematically and aggregated into units that permit precise description of relevant content characteristics“ (Holsti 1969, p. 94). It means a number is assigned to a particular response so the answer can be entered into a database (Hair, *et al.*, 2007).

To measure content-quality of environmental disclosure (CQLEDIS), this study adopted content analysis using environmental disclosure index (EDI) adapted based on prior related studies, and the rating scheme of Wiseman (1982). Thus, environmental related information disclosed through annual report, stand-alone reports, and homepage were classified using environmental disclosure index adapted for this study (see Appendix 3), and scored based on scoring scheme (see Table 4.4). Coding sheet was established to capture the environmental disclosure quality in annual reports, stand-alone reports and corporate homepages of sample companies (see Appendix 5). The coding process involved extracting the data from abovementioned reporting mediums to the coding sheet.

Thus, the undertaken coding procedure entailed the going over annual reports, stand-alone reports and corporate homepages and culling any information relating to the

environment. After setting aside such information, it was re-read, coded and classified as suitable environmental material. It was then coded to the dimensions of evidence (monetary, quantitative or non quantitative) as well as specificity (general or specific). Thereafter, the resulting data on the coding sheet was entered into database, and was finally analyzed.

Total score for each environmental item was referred to in this study as the content-quality score (CQS) and it ranges from zero to three. This score is a value representing varying levels of content-quality, where a score of three represents environmental reporting content that is of high quality. The total content-quality score (TCQS) for each company is a summation of the CQS for each of the 42 environmental items and ranges from zero to 126. In other word, the highest quality of environmental disclosure is 126 while the lowest quality is zero. Thus, the weighted scores for all the EDI items for each company are summed up to obtain the final score for the quality of environmental disclosure for each company. Consequently, the higher the score is, the higher the content-quality of environmental disclosure (CQLEDIS) will be.

The study distinguishes between quantitative (monetary or non-monetary) and non-quantitative (qualitative) disclosures. Quantitative information on environmental issues is defined as information concerning a company's environmental activities expressed in financial or measurable terms, while non-quantitative (qualitative) information is defined as information concerning a company's environmental activities expressed in non-financial or non-measurable terms. The study also distinguishes between specific and general information. Specific information is

defined as information relating to a company's activities or situation or a statement specifically referring to an action, person, event, or place, and general information is defined as information that discusses environmental issues in general not in specific.

Sentence is selected as recording unit in this study; hence, it is possible to have multiple environmental themes recorded in a single sentence. In such case, this study follows previous studies (e.g. Burritt, 1997), in which each mention of an environmental theme is considered a separate disclosure.

Regarding environmental information disclosed on related sections of homepages, following previous studies (cf. Chatterjee and Mir, 2008; Coupland, 2006; and Patten & Crampton, 2004), the analysis is limited to up to two levels from the homepage/sitemap (determined by the number of clicks required to arrive at the environmental information from the homepage), unless further links indicate the disclosure of environmental information beyond the second level.

Because external websites are beyond the editorial control of the companies (Tilt, 2008) and consistent with previous studies (cf. Patten & Crampton, 2004; Tilt, 2008), links to external websites, including, subsidiaries websites and parent companies websites were excluded. Moreover, links to other reporting mediums (except annual reports and stand-alone environmental reports which are covered by this study and coded separately), such as soft version of newspapers, magazines and bulletins, audios and videos records available on the homepages were excluded, as they are considered separate reporting mediums that are not covered in this study.

4.6 Research Model

Another issue that was taken into consideration is that the sample companies belong to different countries so they may report their amount in different currencies. To make all units comparable, all monetary figures (currency amounts) were converted to a single currency. This is in line with previous studies (e.g. Silva, 2008; Ying, 2006). The U.S. dollar was used as it is the dominant currency used by the sample companies. To do so, a foreign currency converter (available on <http://www.oanda.com/>) is employed. Current (on date of data recording) exchange rates to US dollars give a comprehension of the amounts reported in different currencies. Alternations in exchange rates between different occasions, dates and years for reported data, are not considered. To ensure consistency one coder should be responsible for the final coding (Daley, McKinlay & Percy, 2000); hence, the final coding process was conducted by the researcher only.

4.6 Research Model

In order to achieve the third objective of this study - identify the factors that may explain the environmental disclosure quality of oil and gas companies in developing countries- a multiple regression model was utilized. Thus, the environmental disclosure content-quality assigned to each company based on the framework is the dependent variable and the 12 proposed factors are the independent variables.

By incorporating all variables concerned by this study, the regression model is expressed as follows:

$$\text{CQLEDIS} = \alpha + \beta_1(\text{SIZE}) + \beta_2(\text{TYP CO}) + \beta_3(\text{CLSMAR}) + \beta_4(\text{OWNCON}) + \beta_5(\text{FORGOW N}) + \beta_6(\text{INSTITOWN}) + \beta_7(\text{STOWN}) + \beta_8(\text{PROFIT}) + \beta_9(\text{LEV}) + \beta_{10}(\text{MULTI NA}) + \beta_{11}(\text{ENVCERT}) + \beta_{12}(\text{INDMEM}) + \varepsilon$$

Where:

CQLEDIS= Total score for content quality of environmental disclosure for a company

SIZE = Company size measured by log of total assets

TYPCO = Type of company, a dummy variable "1" if a company is an individual company, "0" otherwise

CLSMAR = Close to market measured by, a dummy variable "1" if a company has retail sales and/or brand (RET/BN), "0" otherwise

OWNCONC =Degree of ownership concentration measured by percentage of ownership of a company held by shareholders holding 5% or more of total shareholding

FORO WN= Foreign ownership measured by percentage of shares owned by foreign shareholders

INSTITOWN = Institutional ownership measured by percentage of shares owned by institutional investors

STOWN = State ownership measured by percentage of shares owned by the state

PROFIT = Profitability measured by return on assets (ROA) net income/total assets

LEV = Company leverage measured by the ratio of total liabilities to the total assets

MULTINA = Multinational status, a dummy variable, "1" if a company is multinational, "0" otherwise

ENVCERT = Environmental certification, a dummy variable "1" if a company had ISO 14001 certificate, "0" otherwise

INDMEM = Membership of Industry Associations, a dummy variable "1" if a company is a member of an industry association, "0" otherwise

α = Constant ;

β_{1-12} = Coefficients of the independent variables

ε = Error term

4.7 Data Analysis Methods

Data analysis involves three main objectives, namely, clarifying data, testing its goodness, and analysis of data to examine the study hypotheses (Sekaran, 2003). To achieve these objectives, the collected data was analyzed using the Statistical Package for Social Sciences (SPSS) version 19.0 software programme and Stata software programme. Various statistical techniques were applied: a) goodness of data was examined by testing validity and reliability of the data; b) in order to getting feel

of the data and obtain an understanding of the data, descriptive statistics including minimum, maximum, mean and standard deviation were applied and then, c) the study hypotheses were tested using univariate and multivariate techniques.

Before proceeding to statistical analysis (including the three abovementioned steps), a process of cleaning and screening of data needs to be completed. This is in order to ascertain the accuracy of the input data, missing and outliers values (Sekaran, 2003). The pre-treatment process and the three analysis techniques used in this study are explained as follows:

4.7.1 Getting Data Ready for Analysis

Getting data ready for analysis or data preparation involves editing and checking data for incomplete, missing and outliers values or cleaning and screening of data prior to the main analysis (Hair, *et al.*, 2007; Tabachnick & Fidell, 2007). This may be a time consuming and tedious task but it should be done while keeping in mind that the issues have to be resolved prior to carrying out the main analysis to guarantee authentic data (Tabachnick & Fidell, 2007). Thus, collected data was checked for missing and outliers values.

4.7.2 Statistical Techniques and Tests Used

After data was prepared, different statistical techniques were applied. In order to get the feel of the data and obtain an understanding of the data, the analysis of data through descriptive statistics involving the generation of minimum, maximum, mean, and standard deviation. Moreover, the goodness of data is confirmed through testing its reliability and validity. Thereafter, the study hypotheses are tested using

univariate and multivariate techniques. These analysis techniques are explained as follows:

4.7.2.1 Testing the Goodness of Data

It is claimed that, data collected to test hypotheses must be reasonably good and of assured quality for further analysis. So, before start analyzing the data to test hypotheses, testing the goodness of data should be done as confirming the goodness of data contributes to both data analysis and findings credibility (Sekaran, 2003). Goodness of data gathered is gauged through its validity and reliability.

4.7.2.2 Descriptive Statistics

To feel for the data collected for a study, the data may have to be explored by descriptive analysis. Descriptive statistics refer to the presentation of basic data in a format that could explain a set of variables in an easily understandable and interpretable manner (Sekaran and Bougie, 2010). Zikmund (2000) argued that the descriptive analysis exposes us to more descriptive information and enables us to understand and interpret the data better. Descriptive statistics were adopted to explore the data collected, through content analysis technique used in this study. Thus, using descriptive techniques (frequency, percentage, minimum, maximum, mean, and standard deviation), the collected data in this study was described, summarized and presented into a form that is easy to understand and interpret.

4.7.2.3 Inferential Statistics

Once goodness of data is achieved, the data can be analyzed to test a study's hypotheses. To test hypotheses, different statistical techniques, namely, univariate

and multivariate techniques can be used (Hair *et al.*, 2007). Inferential tests are conducted to determine the relationship between two variables, differences of variables among groups and to test how the variance in a dependent variable is explained by several independent variables (Sekaran, 2003).

The statistical techniques that were used are as follows:

4.7.2.3.1 Univariate Analysis

To detect the relationships between the dependent and the independent variables, univariate analysis is applied (Coakes, Steed & Ong, 2010). Specifically, to provide a description of the linear relationship between two variables in terms of direction and strength, as well as, the possibility of multicollinearity among variables, correlation analysis is used (Coakes *et al.*, 2010; Field, 2009; Pallant, 2001). In this study, univariate analysis was adopted to test the relation between the dependent variable and the independent variables, and to examine the effect difference between disclosure mediums. Thus, to examine nature, direction and significance of the relationship between the level of disclosure quality and each of the twelve independent variables, correlation analysis using Person correlation was used in this study.

In addition, univariate analysis of variance (ANOVA) is used to compare two or more means to see if there are any statistically significant differences among them (Tabachnick & Fidell, 2007). One-way analysis of variance is used to compare the means of more than two groups of an independent variable (Chiong, 2010). Therefore, it is appropriate to test hypothesis 1, where the means of environmental disclosure quality in three disclosure mediums (AN, STAN and HOM) are compared.

4.7.2.3.2 Multivariate Analysis

To examine many variables at the same time, multivariate statistical techniques are required (Hair *et al.*, 2007). Multivariate analysis helps researchers to solve multidimensional complex (three or more variables are involved) problems, as it allows the effects of more than a single variable to be tested simultaneously (Zikmund, 2000).

The main benefit of multivariate method is the accommodation of multiple variables to shed a light on the complex relationship that is impossible to do with the help of univariate and bivariate methods (Hair *et al.*, 2006; Mustapha, 2009; and Tachnick and Fidell, 1996). This method offers the most informative outcome concerning the independent variables as a dependent variable variance, as well as each independent variable's marginal contribution (Oviatt, 1988, as cited in Mustapha, 2009, pp. 111-112).

Multivariate techniques include two basic groups, namely, dependence and interdependence methods. The former is where a variable or variables set is considered as a variable to be predicted by other variables (independent variables) while the latter is where no single variable or variables set is considered as being either independent or dependent (Hair *et al.*, 2006).

The dependent variable can be explained or predicted based on two or more independent variables through the use of multivariate statistical method, specifically, through the analysis of dependence (Zikmund, 2000). Because the present study

attempts to shed a light on the dependent variable (EDCQ) based on several independent variables, dependence analysis was considered to be suitable.

Dependence methods include; multiple regression analysis, multiple discriminant analysis, multivariate analysis of variance, and canonical correlation analysis. While, multivariate analysis of variance and canonical analysis are appropriate techniques for analysis of association in which the effects of two or more independent variables on several dependent variables, multiple discriminant analysis is used in case of several independent variables and one dependent non-metric (the scales are nominal or ordinal) variable are involved, the multiple regression is appropriate technique testing of the impact of two or more independent variables on a single metric (interval-scaled or ratio-scaled dependent variable) at the same time (Zikmund, 2000). Multiple regression analysis refers to a statistical method utilized for the analysis of the single dependent variable-independent variables relationship (Hair *et al.*, 2006).

According to Oviatt (1988, as cited in Mustapha, 2009), multivariate analysis is most suitable to examine relations between a dependent variable and independent variable, as such a method will provide the most robust outcome to explain the independent variables as a variance to the dependent variable. Moreover, it presents the amount of explained variance as well as the marginal contribution of each independent variable (Mustapha, 2009).

The relationship between independent variables and the dependent variable is measured with the help of Ordinary Least Squares (OLS) in multiple regression

analysis. This type of analysis is a suitable statistical technique to test the relations between a number of independent variables and a single metric dependent variable (Silva, 2008), and has been employed by several researchers that examined the dependent variable of voluntary disclosure-independent variables relation (e.g. Cho *et al.*, 2010; Elijido-Ten, 2004; Huafang & Jianguo, 2007; Magness, 2006; Silva, 2008).

4.7.2.3.2.1 Multiple Regression Analysis

Multiple regression analysis is a basic statistical method utilized for the analysis of the relationship between one dependent variable and many independent variables (Hair *et al.*, 2006, p.169). Several methods can be used in multiple regression analysis including standard regression, hierarchical or sequential, and stepwise regression (Pallant, 2001).

This study aims to test the relationships between environmental disclosure quality and twelve independent variables, where it is assumed that the entire independent variables are of identical importance. Hence, the standard multiple regression where the entire independent variables are simultaneously integrated into the equation and assumed to have equal significance, was selected as a suitable method (Pallant, 2001; Tabachnick and Fidell, 2007).

4.7.2.3.3 Multivariate Assumptions Testing

To ensure that conclusions drawn base on the multiple regression results are valid, several diagnostic tests, such as normality, linearity, homoscedasticity, multicollinearity (Hair, *et al.*, 2006) and autocorrelation (Gujarati, 1995) are

required. Satisfying the regression analysis assumptions is important to guarantee that the generated results accurately represent the sample and that we obtain the best results possible. Without verifying that the data have met these assumptions, the results may be misleading (Hair, *et al.*, 2006). Thus, it is not sufficient to simply run a regression analysis, but it is important to verify that the assumptions have been met.

Multiple regression analysis assumptions are applicable to individual variables, both dependent and independent, and to the overall relationship. Thus assumptions must be assessed both for individual variables and for variate itself (Hair, *et al.*, 2006). Assumptions testing of individual variables should be conducted before multiple regression analysis, whereas the variate and its relationship with the dependent variables must be performed after the regression model has been estimated (Hair, *et al.*, 2006).

Based on the above discussion, a number of assumptions underlie OLS regression; normality, homogeneity of variance (homoscedasticity), linearity and multicollinearity, were examined based on the collected data.

4.7.2.3.3.1 Normality

Many statistical tests and procedures assume that data follows a normal distribution. Normality is the most essential assumption in multivariate analysis. This assumption is described to be the level to which sample data distribution satisfies normal distribution (Hair, *et al.*, 2006). It refers to the fact that the residuals (errors) should be normally distributed. Normality of residuals is required for assurance that the P-values for t-tests and F-test are valid. The issue of non-normal distribution of

variables is frequent in social science research (Pallant, 2001). Thus, prior to the application of statistical methods assuming normality, a normality test has to be conducted on the data. It is expected that data follows a normal distribution, and this expectation is thwarted only when there is evidence to justify the contrary. Normality can be examined using both visual checks and statistical (Significance) tests (Field, 2009; Ghasemi & Zahediasl, 2012). Thus, to assess normality of distribution, Hair *et al.* (2006) and Tabachnick and Fidell, (2007) suggested that, both the graphical and statistical methods are used. These tests are explained as follows:

4.7.2.3.3.1.1 Graphical Assessment of Normality:

According to Field (2009), normality is visually checked through the frequency distribution (histogram), stem-and-leaf plot, boxplot, P-P plot (probability-probability plot) and Q-Q plot (quantile-quantile plot). The frequency distribution that plots the observed values against their frequency, offers a visual judgment of whether or not the plot distribution takes on a bell-shaped distribution and of the data gaps and outliers (Peat and Barton, 2005). Similar to the histogram is the stem-and-leaf plot although the latter retains information concerning the values of actual data (Elliot and Woodward, 2007). In particular, the P-P plot forms the cumulative probability of a variable against that of a distinct distribution, in this case normal distribution. Both the normal probability plots and the histograms of the variables provide an overview of a visual data presentation and its approximation to a normal distribution (Cohen, Cohen, West and Aiken, 2003).

4.7.2.3.3.1.2 Statistical Tests of Normality

The normality tests are supplementary to the graphical assessment of normality (Elliott & Woodward, 2007). There are several tests for assessment of normality. They include; Kolmogorov-Smirnov (K-S) test, Lilliefors corrected K-S test, Shapiro-Wilk test, Cramer-von Mises test, Anderson-Darling test, Anscombe-Glynn kurtosis test, D'Agostino-Pearson omnibus test, D'Agostino skewness test, and the Jarque-Bera test (Oztuna, Elhan & Tuccar, 2006; Peat & Barton, 2005). Among these, K-S is a much used test (Thode, 2002), and Shapiro-Wilk test is highly recommended (Ghasemi & Zahediasl, 2012).

While statistical tests on the basis of the rule of thumb method to skewness and kurtosis are simple and useful, it is optimum to use the Kolmogorov-Smirnov test as it is considered to be a more specific statistical test (Hair *et al.*, 2006). The rule of thumb states that the variable is reasonably close to normal if its skewness and kurtosis have values between -1.0 and + 1.0, and K-S with a significant value of more than 0.05 indicates that the distribution is normal at 5% significance level (Pallant, 2007).

Based on the above discussion, for purposes of this study, both visual and statistics were used to assess the normality. Thus, graphical histogram and plots and statistical tests were used in this study. Skewness and Kurtosis values were also used and the Kolmogorov-Smirnov test (K-S) and Shapiro-Wilk (S-W) tests were applied.

The assumption of normality arises when the ratio of Skewness/Standard Error and Kurtosis/Standard Error falls in the range of ± 1.96 , and the alpha value of 0.05, and

in the range of ± 2.58 at the alpha value of 0.01 (Hair *et al.*, 2006). Alpha levels that are conventional but conservative at 0.01 and 0.001 are widely used for the evaluation of normality assumption (Tabachnick & Fidell, 2007).

Another indicator for normality is standard error for skewness and kurtosis ratios. According to Hair *et al.* (2006), normality is said to be present in cases where the standard error of skewness and kurtosis falls in the range of ± 2 at 0.05 level of the significance.

To reduce the skewness of the distributions, and the potential effects for the size of the variables on the regression equation, transformation for non-normal distribution variables is necessary. Thus, following previous studies (cf. Ahmed & Nicholls, 1994; Akhtaruddin, 2010; Alias, 2001; Jindal & Kumar, 2012; Lassaad & Khamoussi, 2012; Wallace & Naser, 1995) company size was transformed using the log of assets. Normality was examined via two analysis techniques (one-way analysis of variance and regression analysis) in this study.

4.7.2.3.3.2 Linearity

Linearity is a relationship between variables that can be described by a straight line passing through the data cloud. It means that there is a straight-line relationship between two variables (Tabachnick & Fidell, 2007).

In regression, the relationship between the dependent and independent variables should be checked to determine the linearity existence. There are graphical methods (including scatter plots diagram) and statistical methods (correlation coefficients and simple regression) for evaluating linearity.

To check the linearity between the dependent and independent variables, P-P plots can be used. When the plots are close to the diagonal line, it indicates that a strong relationship exists (Hair *et al.*, 2006, Pallant, 2005). In this study, the linearity was assessed through an analysis of residuals and partial regression plots.

4.7.2.3.3 Homoscedasticity

The homoscedasticity assumption posits that the dependent variable show equal variance levels throughout the range of predictor variables. It is description of data for which the variance of the error terms appears constant over the range of values of an independent variable (Hair, *et al.*, 2006). The desirability of homoscedasticity lies in the fact that the dependent variable's variance should not be explained in the dependence relationship to a limited range of independent values (Hair *et al.*, 2006). The presence of unequal variance (the violation of Homoscedasticity) is called heteroscedasticity. Heteroscedasticity is one of the most common assumption violations in multivariate analysis (Hair *et al.*, 2006).

The issue of heteroscedasticity arises when the variance of errors does not remain constant throughout the sample observation and this issue has to be resolved as it may lead to a biased value of the true variance. Heteroskedasticity means that the error variance should be constant, as one of the main assumptions for OLS regression is the homogeneity of the variance of residuals. If the variance of the residuals is non-constant, then the residual variance is said to be heteroskedastic.

Homoscedasticity can be verified through visual examination of a standardized residuals plot made by the regression standardized predicted value, or by performing statistical tests (Osborne & Waters, 2002). Visual examination includes looking at a particular scatter plot or residual histograms are indicated as the most informative way (Zhang & Wang, 2009).

The null hypothesis of this test is that the variance of residuals is homogenous, so if the P-value is small, the null hypothesis will be rejected, and will accept the alternative hypothesis that the variance is heteroskedastic. An alpha level of .05 was used for all analyses. If the Levene's test result is statistically significant (the result has a $p \leq .05$), it means that the data do not show homogeneity of variance. In cases where the Levene's test is insignificant at ($p > .05$), it can be assumed that data has homogeneity of variance and upon the detection of the heteroscedasticity issue, it can be handled through the White Heteroscedasticity Consistent Variance, and the Standard Error Technique of weighted least square method or by data transformation (Hair *et al.*, 2006).

4.7.2.3.3.4 Multicollinearity

The absence of exact collinearity between two independent variables is an important assumption that underlies multiple regression analysis (Cheng, Hossain and Law, 2001). Collinearity refers to the relationship between two (collinearity) or more (multicollinearity) independent variables. Hence, collinearity arises in cases when a single independent variable highly correlated with another independent variable whereas multicollinearity arises when any single independent variable correlates highly with a set of independent variables (Hair *et al.*, 2006). This is an issue that has

the potential of influencing the model testing as it become challenging to estimate the true model's coefficient in an accurate manner (Cheng *et al.*, 2001). On the basis of the above, it is important to check data for potential multicollinearity cases. In this study, data was examined for any issues of multicollinearity.

Multicollinearity can be detected through few methods like the Tolerance and Variance Inflation Factor (VIF) (Hair *et al.*, 2006) or by the Pearson-Correlation Matrix. The VIF is the inverse of the Tolerance values (1 divided by Tolerance). While, the correlation matrix technique is considered as the simplest means, the two commonly used measures of collinearity and multicollinearity are Tolerance and Variance Inflation Factor (VIF) (Hair, *et al.*, 2006; Pallant, 2001).

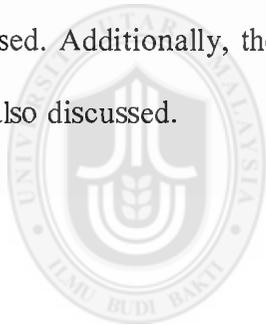
For purposes of this study, the three techniques were used to examine the collinearity of the independent variables. Thus, for detecting the collinearity problem, correlation matrix, in addition to Tolerance and Variance Inflation Factor (VIF) were used to examine the correlation of independent variables.

According to Anderson, Sweeney and William (1996), if the Pearson-correlation result is higher than 0.6, there would be a multicollinearity problem. On the other hand, Coakes *et al.* (2010) argued that multicollinearity is identified if any of the squared multiple correlations are near or equal to 1. Field (2009) explains that if correlations are above 0.8 or 0.9, multicollinearity exists. Similarly, Hair *et al.* (2006) and Pallant (2001) suggested that, a correlation of 0.90 and above indicates a serious problem.

For VIF, the rule says that, the variable is said to be highly correlated if the VIF of the variable exceeds 10, while, the common cut off threshold is a tolerance value of .10, which corresponds to a VIF value less than 10 (Hair *et al.*, 2006). Thus, a small value of Tolerance (less than 0.10) will indicate the possibility of multicollinearity (Pallant, 2007).

4.8 Summary

This chapter discussed the research methods that were used in this study. Sampling process, data collection methods, dependent and independent variables, operational definitions and measurements, content analysis approach and index approach used in this study were discussed. The research instruments' validity and reliability were also discussed. Additionally, the data analysis methods that were employed in this study were also discussed.



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CHAPTER FIVE

DATA ANALYSIS AND FINDINGS

5.1 Introduction

This study aimed to examine the environmental disclosure practices in various reporting mediums of oil and gas companies in developing countries. Specifically, the study aimed to examine the content-quality of environmental disclosure in annual reports, stand-alone reports and corporate homepages of oil and gas companies in developing countries, identify differences between these three reporting mediums in terms of disclosure content-quality, as well as determine factors that influencing the content-quality of environmental disclosure. To achieve these objectives, and to test the hypotheses enumerated in chapter three, various techniques were used to analyze the collected data as discussed in previous chapter. This chapter presents the results of various data analyses carried out in this study. The chapter is divided into three sections. Following this introductory section, section 5.2 presents the data analysis and results and section 5.3 concludes the chapter.

5.2 Data Analysis

To determine the content-quality of total environmental disclosure in annual reports, stand -alone reports and web sites of the oil and gas companies in developing countries, this study developed an index of 42 items classified into eight categories adapted based on prior related studies, and the rating scheme of Wiseman (1982). Annual reports, stand-alone reports and environmental-related sections on corporate homepages for the year 2010 were analysed, using content analysis.

Thus, the three reporting mediums mentioned above were carefully read, and the environmental-related information was extracted and coded using coding sheet designed for this purpose. The environmental-related information was classified to its appropriate environmental items, then given a score of three, two or one based on its type, where: three scores granted to quantitative disclosure, two scores granted to non-quantitative specific disclosure and one score given to the general qualitative disclosure. The data coded into coding sheet was entered into database, then analysed.

Data analysis entails three primary objectives, which are; to get an overview of the data, to examine the data goodness and to test the study hypotheses (Sekaran, 2003). To achieve these objectives, the collected data was analyzed using the Statistical Package for Social Sciences (SPSS) version 19.0 software programme and Stata software programme. Various statistical techniques were applied. Thus, goodness of data was examined by testing validity and reliability of the data, and in order to get the feel of the data and obtain an understanding of the data, descriptive statistics including minimum, maximum, mean and standard deviation were applied; and then, the study hypotheses were tested using univariate and multivariate techniques.

Before proceeding to statistical analysis (including the three abovementioned steps), a process of cleaning and screening of data needs to be completed. These treatment and analysis techniques are explained as follows:

5.2.1 Data Preparation

In order to ascertain the accuracy of the input data, missing and outliers values, data should be checked for missing and outliers values (Sekaran, 2003).

5.2.1.1 Missing Data Checking

As mentioned earlier, some companies were excluded from the sample because of non-availability of/or inaccessibility or non-English websites, non-availability of annual reports and/or stand-alone environmental reports. Moreover, after the scoring sheets were completed, they were checked for missing data. It was observed that 17 cases had missing data.

As missing data may be raised because of data collection (Hair, *et al.*, 2007), the collected data were matched with original sources (i.e. annual reports, stand-alone reports and corporate homepages). Therefore, some scoring sheets were completed. This resulted in reducing cases with missing data to 9 cases. The rule of thumb is that, when a few cases have large proportion of missing data (exceeding 10% of the total responses) exclusion of cases with missing data is good alternative (Hair, *et al.*, 2006; Tabachnick & Fidell, 2007). Thus, the nine companies with missing data were excluded from the sample.

After exclusion incomplete cases, the scoring sheets were entered and tabulated in a worksheet of Excel. In order to ensure the accuracy of data input in excel worksheet, the manual scoring sheets and excel worksheet were compared, then the discrepancies were corrected.

5.2.1.2 Outliers Checking

Another objective of the process of cleaning and screening of data is to examine the outliers' presence. Outliers refer to unique observations in terms of characteristics and can be identified as distinct from other observations (Hair *et al.*, 2006). They are described as data points that numerically set themselves apart from other data points. Outlier is also known as extreme value on a particular item. It is recognized that, outliers may have an influential impact on a regression analysis, as they can impact the existing trend slope and the correlations strength significantly. So it is important to identify data that may be influential, and to determine whether they should be excluded from the dataset.

Operationally, an outlier refers to a value that is at least 3 standard deviations higher or lower than the mean. Stated differently, cases that are over plus or minus three standard deviations from the mean of the variable are known as outliers (Tabachnick and Fidell, 2007). Outliers can throw off the results so that they do not accurately represent the sample population. So, before performing a statistical analysis, in order to ensure accurate conclusions drawn from a study, outliers should be identified and dealt with.

Following Hair *et al.* (2006) and Tabachnick and Fidell (2007), outliers were identified using Mahalanobis distance, Cooks statistics, leverage values, and identifying observations outside 2.5 – 3 standard deviations from the mean. Thus, a few cases with outlier values were predicted such as, ten outliers in company size variable, two outliers in foreign ownership variable and two outliers in state

ownership variable. As the distribution of the independent variable company size was not normal, transformation of data is considered.

While removing outliers from data is considered as common way to deal with outliers, a researcher should justify doing so. There may be several justifications to delete data-points and these include outliers stemming from measurement errors, erroneously entered data-points or impossible real life values.

Hair *et al.* (2006) suggested that, outliers should be deleted from the model if they are inappropriate representatives of the population from which the sample is obtained. As such, data was checked for coding errors, and no errors were detected. Moreover, a close investigation of these cases showed they still represented the population. Based on suggestion Hair *et al.* (2006) and following previous studies (cf. Alias, 2011), cases with outliers were not excluded from the sample.

5.2.2 Testing the Goodness of Data

It has been claimed that, data collected to test hypotheses must be reasonably good and of assured quality for further analysis. So, before start analyzing the data to test hypotheses, testing the goodness of data should be done as establishing the goodness of data lends credibility to the data analysis and findings (Sekaran, 2003). Thus, following the loading of the data into SPSS, reliability and validity analyses were performed to test goodness of data.

5.2.2.1 Reliability Test

Reliability refers to the stability and consistency with which the instrument measures the concept and assists in assessing the goodness of measure (Sekaran, 2003). It is

the level to which measures do not contain error and consistent generate the same results (Zikmund, 2003). In other words, it refers to the ability of different people to code the same text in the same way (Weber, 1990).

The reliability of disclosure measurement was measured in two stages. Firstly, inter-coder reliability was measured in a pilot study (as discussed in chapter four). In second stage, the measurement categories of CED index are examined for internal consistency.

Sekaran (2003) described internal consistency as the level of inter-correlation among items measuring a single concept. This method is extensively utilized in field studies (Ang *et al.*, 2000) as the most fundamental reliability estimation form (Nunnally, 1978). According to Radhakrishna (2007), in order to assess the instrument's reliability on an interval/ratio scale, internal consistency has to be utilized. However, internal consistency may be measured via different methods with Cronbach's alpha as the most well-known method (Pallant, 2001; Sekaran, 2003). Cronbach's alpha has been evidenced to adequately indicate internal consistency and reliability of measure (Sekaran, 2003). Therefore, the reliability of the instrument is assessed through the internal consistency analysis of Cronbach's coefficient alpha.

A minimum value of zero and a maximum value of one is taken by Cronbach's coefficient alpha (Hair *et al.*, 2007) and the closer it is to 1, the higher the internal consistency reliability will be (Sekaran, 2003). Hair *et al.* (2007) recommended that alpha equal to 0.7 or over is acceptable.

Table 5.1

Alpha Values

| Alpha Coefficient Range | Strength of Association |
|-------------------------|-------------------------|
| <0.6 | Poor |
| 0.6 to <0.7 | Moderate |
| 0.7 to <0.8 | Good |
| 0.8 to <0.9 | Very Good |
| ≥0.9 | Excellent |

Source: Adapted from (Hair, *et al.*, 2007)

The categories of CED index, i.e. Economic Factors (ECONs), Laws and Regulations (LAWs), Pollution abatement/Emission and discharge information (POLLs), Sustainable development (SUSTs), Disturbances to land and land remediation and contamination (DISTs), Spills (SPILs), Environmental management (ENVMAs), Health and Safety (HSs) are examined using Cronbach's coefficient alpha to assess the internal consistency of disclosure items. Cronbach's coefficient alpha takes on a minimum value of zero and a maximum value of one, and in a general, an alpha of 0.7 or more is acceptable. The Cronbach's coefficient alpha for the eight categories in the disclosure index is 0.893.

Table 5.2 below shows the result for Cronbach's coefficient alpha for the scale used in this study.

Table 5.2

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | No of Items |
|------------------|--|-------------|
| .893 | .893 | 42 |

Cronbach's alpha, as presented in the table is 0.893, indicating a high level of internal consistency for the current study's scale. The Cronbach's alpha after item deletion is presented in Table 5.3 below;

Table 5.3
Item-Total Statistics

| Item | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|--------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| ENV1 | 67.73 | 275.846 | .494 | .889 |
| ENV2 | 68.39 | 273.496 | .436 | .890 |
| ENV3 | 69.12 | 277.472 | .397 | .891 |
| ENV4 | 69.83 | 289.414 | .205 | .893 |
| ENV5 | 68.45 | 282.002 | .257 | .894 |
| ENV6 | 69.69 | 286.038 | .272 | .892 |
| ENV7 | 69.51 | 278.040 | .464 | .889 |
| ENV8 | 68.12 | 288.976 | .343 | .891 |
| ENV9 | 67.39 | 288.524 | .401 | .891 |
| ENV 10 | 67.80 | 281.490 | .376 | .891 |
| ENV 11 | 67.53 | 286.322 | .399 | .891 |
| ENV 12 | 69.57 | 285.840 | .306 | .892 |
| ENV 13 | 68.06 | 289.456 | .430 | .891 |
| ENV 14 | 68.18 | 277.314 | .516 | .888 |
| ENV 15 | 67.34 | 287.289 | .423 | .891 |
| ENV 16 | 68.44 | 273.948 | .468 | .889 |
| ENV 17 | 67.59 | 283.908 | .536 | .889 |
| ENV 18 | 68.45 | 281.046 | .413 | .890 |
| ENV 19 | 68.53 | 276.446 | .501 | .889 |
| ENV20 | 68.39 | 281.319 | .354 | .891 |
| ENV21 | 68.34 | 275.484 | .499 | .889 |
| ENV22 | 68.76 | 271.616 | .519 | .888 |
| ENV23 | 69.27 | 276.341 | .510 | .889 |
| ENV24 | 69.75 | 286.612 | .283 | .892 |
| ENV25 | 68.07 | 294.827 | .130 | .893 |
| ENV26 | 68.27 | 288.731 | .334 | .891 |
| ENV27 | 68.67 | 279.410 | .460 | .889 |
| ENV28 | 67.97 | 286.557 | .285 | .892 |
| ENV29 | 69.01 | 280.080 | .437 | .890 |
| ENV30 | 69.05 | 279.378 | .463 | .889 |
| ENV31 | 68.54 | 288.675 | .215 | .893 |
| ENV32 | 68.78 | 281.128 | .426 | .890 |
| ENV33 | 67.94 | 279.846 | .519 | .889 |
| ENV34 | 68.39 | 271.799 | .607 | .887 |
| ENV35 | 68.08 | 294.746 | .154 | .893 |
| ENV36 | 68.18 | 295.880 | -.010 | .894 |
| ENV37 | 68.33 | 288.437 | .294 | .892 |
| ENV38 | 67.94 | 280.642 | .480 | .889 |
| ENV39 | 69.01 | 276.841 | .490 | .889 |
| ENV 40 | 68.37 | 278.376 | .436 | .890 |
| ENV41 | 68.85 | 283.933 | .312 | .892 |
| ENV42 | 67.35 | 289.593 | .331 | .892 |

This table, under the "Cronbach's Alpha if item deleted", presents the value that Cronbach's alpha would be if that particular item was deleted from the scale. It is noted that, removal of any item, except item 5 and item 36, would result in a lower or

same Cronbach's alpha. Removal of items 5 and 36 would lead to a small improvement in Cronbach's alpha (from 0.893 to 0.894).

However, unless the improvement is dramatic and there is a separate reason, then an item should be left as part of the scale (Fornell & Larcker, 1981). So it is not necessary to delete any of the items to improve the reliability score of this scale.

5.2.2.2 Validity Test

This study employed the content validity approach for the validity test. It is argued that an examination of the internal consistency of the disclosure index provides some insights into the validity of the disclosure scores, as internal consistency reliability is an indirect way to test a content validity of an instrument (Sekaran 2003; Walsh, 1995). Thus, as results of reliability shown above in tables 5.2 and 5.3, indicated high level of internal consistency, therefore, content validity is evident.

5.2.3 Descriptive Statistics

Descriptive statistics were adopted to explore the data collected. Frequencies and percentages were used to explore sample distribution and dichotomous explanatory variables, while, continues explanatory variables and dependent variable were explored using minimum, maximum, mean and standard deviation.

5.2.3.1 Descriptive Statistics of Sample

Table 5.4 shows the distribution of the sample by country.

Table 5.4
Sample Distribution by Country

| Country of origin | Number of Companies | Percentage |
|--------------------------|----------------------------|-------------------|
| Argentina | 4 | 3.4 % |
| Brazil | 5 | 4.3 % |
| China | 11 | 9.5 % |
| Colombia | 3 | 2.6 % |
| Egypt | 7 | 6.1 % |
| India | 16 | 13.8 % |
| Indonesia | 5 | 4.3 % |
| Kazakhstan | 5 | 4.3 % |
| Kenya | 4 | 3.4 % |
| Kuwait | 5 | 4.3 % |
| Nigeria | 7 | 6.0 % |
| Oman | 4 | 3.4 % |
| Pakistan | 9 | 7.8 % |
| Qatar | 4 | 3.4 % |
| Republic of Korea | 4 | 3.4 % |
| Saudi Arabia | 6 | 5.2 % |
| Thailand | 4 | 3.4 % |
| Trinidad and Tobago | 4 | 3.4 % |
| Turkey | 9 | 7.8 % |
| Total | 116 | 100% |

Table 5.4 shows the distribution of the sample. It reveals that, this study included 116 companies from nineteen countries. About twenty three percent of companies (n=27) belong to two countries (India= 16, China =11).

5.2.3.2 Descriptive Statistics of Environmental Disclosure

To determine the content-quality of total environmental disclosure in the three reporting media covered by this study (i.e. annual reports, stand-alone reports and corporate homepages) of oil and gas companies in developing countries, a disclosure index was adapted from various studies comprising 42 items classified into eight categories. The three reporting mediums mentioned above for the year 2010 were analysed, using content analysis. Every sentence related to each item in the index were scored using Wiseman's (1982) scoring scheme (3 scores for quantitative information, 2 scores for specific qualitative information, and 1 score for general

information). Moreover, environmental disclosure content-quality was examined both in aggregated (in the three reporting mediums all together) and by reporting medium (separately in each medium).

Thus, to investigate whether there is any difference between different environmental reporting mediums (i.e. annual report, stand-alone report, and corporate homepage) in regard of their disclosure content-quality, each medium was analyzed and coded separately, while the three media were coded and analyzed all together (in aggregate) to examine the relationships between the dependent variable and the independent variables.

5.2.3.2.1 Overall Content-quality of Environmental Disclosure (Cumulatively in all Media)

To assess the disclosure content-quality, the disclosure index and scoring system were used. Thus, each reporting medium for each company in the sample was carefully read and every sentence was evaluated by determining which index item was covered in the sentence and then the appropriate scale was applied to score it for quality. Total scores were calculated for each index category and for the index as a whole. Based on the disclosure index (comprises 42 items) and scoring system (range from 0 to 3 scores) used in this study, theoretically, a company can score a maximum of 126 points (42×3).

Table 5.5 displays the descriptive statistics for the environmental disclosure content-quality of the 116 companies in the sample. It shows the means for each of the eight index categories and overall content-quality of environmental disclosure. The table shows that the range of environmental disclosure content-quality scores varies

Table 5.5 also presents the level of content-quality of environmental disclosure widely, from 33 to 106. It also shows that the mean score of total environmental disclosure content-quality per company is 68.98. Thus, the scores of 68.98 represent 54.75% out of all possible environmental disclosure scores of 126 (i.e., 42 items × maximum score of 3). This level of disclosure quality is similar to that found by Eljayash *et al.* (2012) who revealed that the average of quality of CED in annual reports by oil companies in the Arab oil countries was 26.66 (55.54%) in 2010. However, the level of environmental disclosure content-quality of the current study is relatively high compared to those found by the majority of previous studies (cf. Ahmad and Haraf, 2013; Ane, 2012; Comyns and Figge, 2015; Cuesta and Valor, 2013; Dong *et al.*, 2015; Eakpisankit, 2012; Haji, 2013; Harun *et al.*, 2013; Hooks & Van Staden, 2011; Michelon *et al.*, 2015; Oba and Fodio, 2012a; Sulaiman *et al.*, 2014).

Table 5.5 also presents the level of content-quality of environmental disclosure for each of eight categories. It shows that the content-quality of environmental disclosure of each category is different. The results revealed that the content-quality of environmental disclosure varies by disclosure category. It can be seen that “Environmental management” achieved the highest disclosure mean score of 16.29, followed by “Health and safety” category with a mean score of 14.88, whereas the category of “Spills & environmental incidents” has the lowest mean score (2.40).

Based on average mean, the category of “sustainable development“ has the highest average mean of scores of 2.123, followed by “pollution abatement” (average mean of 2), “health and safety” (1.86), “disturbances to land and land remediation” (1.657), “environmental management” (1.629), “economic factors“ (1.404), “laws and

regulations” (0.97), and lastly, the “spills & environmental incidents” category has the lowest average mean (0.80).

Table 5.5
Descriptive Statistics of Environmental Disclosure Categories

| Categories | Min. | Max. | Sum | Mean | Average Mean | Std. Deviation |
|---|-----------|------------|-------------|--------------|--------------|----------------|
| Economic factors | 0 | 15 | 814 | 7.02 | 1.404 | 4.230 |
| Laws and regulations | 0 | 9 | 338 | 2.91 | .97 | 1.722 |
| Pollution abatement | 2 | 17 | 1390 | 11.98 | 2 | 2.804 |
| Sustainable development | 0 | 12 | 985 | 8.49 | 2.123 | 2.472 |
| Disturbances to land and land remediation | 0 | 9 | 576 | 4.97 | 1.657 | 2.574 |
| Spills & environmental incidents | 0 | 9 | 278 | 2.40 | .80 | 2.509 |
| Environmental management | 2 | 26 | 1890 | 16.29 | 1.629 | 4.936 |
| Health and safety | 6 | 21 | 1726 | 14.88 | 1.86 | 3.182 |
| Total | 33 | 106 | 7997 | 68.98 | | 15.514 |

N= 116

5.2.3.2.2 Descriptive Statistics of Environmental Disclosure Categories

As mentioned earlier, this study measures the content-quality of environmental disclosure of sample companies, using disclosure index of 42 items classified into eight categories. Previous section has discussed descriptive statistics of environmental disclosure by categories. Further, this section discusses descriptive statistics of environmental disclosure by items in each category. The following paragraphs provide descriptive statistics analysis of the items disclosed in each category.

5.2.3.2.2.1 Economic Factors Disclosure Items

This category contains five environmental disclosure items related to environmental costs, both operating and capital costs, either past, current or future (expected) costs. As shown in Table 5.6, the mean of economic factors category is 7.02 scores, and the average mean is 1.404. Furthermore, the table presents mean of each item of this category. The table shows that, the highest score relates to information on "past and

current environmental capital expenditures" (2.39 scores), followed by "environmental liabilities and provisions" (1.70 score), and "past and current environmental operating costs" (1.69 score), while, the lowest score was for "future environmental operating costs" item (0.28 score).

Table 5.6
Descriptive of Economic Factors Disclosure Items

| Items | Min. | Max. | Sum | Mean | Std. Deviation |
|---|----------|-----------|------------|--------------|----------------|
| Past and current environmental capital expenditures | 0 | 3 | 277 | 2.39 | 1.133 |
| Past and current environmental operating costs | 0 | 3 | 196 | 1.69 | 1.411 |
| Future environmental capital expenditures | 0 | 3 | 112 | .97 | 1.264 |
| Future environmental operating costs | 0 | 3 | 32 | .28 | .798 |
| Environmental liabilities and provisions | 0 | 3 | 197 | 1.70 | 1.385 |
| Total | 0 | 15 | 814 | 7.02 | 4.230 |
| <i>Average Mean</i> | | | | 1.404 | |

5.2.3.2.2.2 Laws and Regulations Disclosure Items

The disclosure of category of "laws and regulations" has the second lowest average mean of scores, with 0.97 (see Table 5.5 above). This category comprises three items related to environmental legislations and regulations, litigation and legal proceedings, and fines and penalties (monetary and non-monetary) for noncompliance with environmental laws and regulations. As illustrated in Table 5.7, the mean of laws and regulations category is 2.91 scores, and the average mean is 0.97. The table also showed that the highest score (about 2 scores) relates to information on "environmental legislations and regulations requirements", followed by "fines and penalties" (0.53 score), and the lowest score is for "litigation" item (0.40 score).

Table 5.7
Descriptive of Laws and Regulations Disclosure Items

| Items | Min. | Max. | Sum | Mean | Std. Deviation |
|---|----------|----------|------------|-------------|----------------|
| Litigation (present and Potential) | 0 | 3 | 46 | .40 | .959 |
| Fines and Penalties | 0 | 3 | 61 | .53 | 1.008 |
| Environmental legislations and regulations requirements | 0 | 3 | 231 | 1.99 | .552 |
| Total | 0 | 9 | 338 | 2.91 | 1.722 |
| <i>Average Mean</i> | | | | <i>.97</i> | |

5.2.3.2.2.3 Pollution Abatement Disclosure Items

Table 5.8 shows the descriptive statistics of this category. This category comprises six items related to pollution abatement. As shown in Table 5.8, the mean of pollution abatement is about 12 scores, while its average mean is 2. Among the eight categories of environmental disclosure index this category has the second highest average mean (see Table 5.5 above). Within category, "air emission information" has the highest score (2.71 scores), followed by "waste disposal information" (2.54 scores) and "water discharge information" (2.28 scores), while, the lowest score (0.48) relates to information on "noise, odours and visual quality".

Table 5.8
Descriptive of Pollution Abatement Disclosure Items

| Items | Min. | Max. | Sum | Mean | Std. Deviation |
|--|----------|-----------|-------------|--------------|----------------|
| Air emission information | 0 | 3 | 314 | 2.71 | .528 |
| Water discharge information | 0 | 3 | 265 | 2.28 | 1.062 |
| Waste disposal information | 0 | 3 | 295 | 2.54 | .727 |
| Noise, odours and visual quality | 0 | 2 | 56 | .48 | .839 |
| Activities, products and services impacts on environment | 1 | 3 | 237 | 2.04 | .333 |
| Installation of environmental control systems, facilities or processes described | 0 | 3 | 223 | 1.92 | 1.040 |
| Total | 2 | 17 | 1390 | 11.98 | 2.804 |
| <i>Average Mean</i> | | | | <i>2</i> | |

5.2.3.2.2.4 Sustainable Development Disclosure Items

This category contains four items relevant to sustainable development. The mean of scores of this category is 8.49, and the average mean is 2.123. Among the eight categories of environmental disclosure index this category has the highest average mean (see Table 5.5 above).

Table 5.9 shows the descriptive statistics of items included in this category. The table reveals that, information of conservation of natural resources has a mean of 2.78 scores, which is considered as the highest mean in this category. Progress toward sustainability ranked the second highest item (2.52 scores) followed by research and development activities for sustainable development (1.63 scores) and recycling (1.57 scores).

Table 5.9
Descriptive of Sustainable Development Disclosure Items

| Items | Min. | Max. | Sum | Mean | Std. Deviation |
|---|----------|-----------|------------|--------------|----------------|
| Conservation of natural resources | 0 | 3 | 322 | 2.78 | .576 |
| Recycling | 0 | 3 | 182 | 1.57 | 1.300 |
| Progress toward sustainability | 0 | 3 | 292 | 2.52 | .597 |
| Research and development activities for sustainable development | 0 | 3 | 189 | 1.63 | 1.026 |
| Total | 0 | 12 | 985 | 8.49 | 2.472 |
| <i>Average Mean</i> | | | | 2.123 | |

5.2.3.2.2.5 Disturbances to Land and Land Remediation Disclosure Items

This category contains three items of environmental disclosure information which cover different aspects, such as, site conditions, site restoration, operations impacts to land and efforts and actions to minimize disturbances to land. As illustrated in Table 5.10, the mean of disturbances to land and land remediation category is 4.97 scores, and the average mean is 1.657. The table also shows that, disclosure item “efforts of

remediation" has the highest mean of scores (1.72 score), followed by the item "disturbances to land" (1.71 score), then item "sites" (1.54 score).

Table 5.10
Descriptive of Disturbances to Land and Land Remediation Disclosure Items

| Items | Min. | Max. | Sum | Mean | Std. Deviation |
|---|----------|----------|------------|--------------|----------------|
| Sites | 0 | 3 | 179 | 1.54 | 1.106 |
| Disturbances to land | 0 | 3 | 198 | 1.71 | 1.111 |
| Efforts of remediation/ rehabilitation (present and future) | 0 | 3 | 199 | 1.72 | 1.117 |
| Total | 0 | 9 | 576 | 4.97 | 2.574 |
| <i>Average Mean</i> | | | | <i>1.657</i> | |

5.2.3.2.2.6 Spills & Environmental Incidents Disclosure Items

The disclosure of category of "spills & environmental incidents" has the lowest average mean of scores, with 0.80 scores. As shown in Table 5.11, this category contains three items and its mean is 2.40. The table also indicates that the three disclosure items included in this category, namely, "number and nature of spills", "efforts to reduce and/or prevent spills" and "costs of treatment of spills" have means of scores of 1.27, 0.78 and 0.34 scores, respectively.

Table 5.11
Descriptive of Spills & Environmental Incidents Disclosure Items

| Items | Min. | Max. | Sum | Mean | Std. Deviation |
|---|----------|----------|------------|-------------|----------------|
| Number and nature of spills | 0 | 3 | 147 | 1.27 | 1.295 |
| Efforts to reduce and / or prevent spills | 0 | 3 | 91 | .78 | 1.045 |
| Costs of treatment of spills. | 0 | 3 | 40 | .34 | .835 |
| Total | 0 | 9 | 278 | 2.40 | 2.509 |
| <i>Average Mean</i> | | | | <i>.80</i> | |

5.2.3.2.2.7 Environmental Management Disclosure Items

This category contains ten disclosure items relating to different environmental management aspects. As illustrated in Table 5.12, the mean of this category is 16.29

scores, and the average mean is 1.629. The table indicates that the item of “environmental activities and programmes” has the highest mean (2.16 scores), followed by goals and targets (2.11 scores), and environmental policies or company concern for the environment (2.06 scores), while, the lowest score is for “environmental awards and recognition” item (1.03 score).

Table 5.12
Descriptive of Environmental Management Disclosure Items

| Items | Min. | Max. | Sum | Mean | Std. Deviation |
|---|----------|-----------|-------------|--------------|----------------|
| Environmental policies or company concern for the environment | 2 | 3 | 239 | 2.06 | .239 |
| Environmental management system (EMS) | 0 | 3 | 212 | 1.83 | .608 |
| Environmental auditing | 0 | 3 | 167 | 1.44 | 1.024 |
| Goals and targets | 0 | 3 | 245 | 2.11 | .872 |
| Environmental awards and recognition | 0 | 3 | 120 | 1.03 | 1.012 |
| Department/ committee for environmental affairs pollution control | 0 | 2 | 125 | 1.08 | .988 |
| Joint projects with other firms on environmental management | 0 | 3 | 179 | 1.54 | .888 |
| Involvement to environmental organizations | 0 | 3 | 152 | 1.31 | .973 |
| Environmental activities and programmes | 0 | 3 | 251 | 2.16 | .844 |
| Environmental training and education programmes | 0 | 3 | 200 | 1.72 | 1.139 |
| Total | 2 | 26 | 1890 | 16.29 | 4.936 |
| <i>Average Mean</i> | | | | <i>1.629</i> | |

5.2.3.2.2.8 Health and Safety Disclosure Items

This category comprises eight items related to health and safety aspects, such as health and safety incidents, health and safety laws, regulations, policies and systems, health and safety training, and health and safety auditing. This category has the third highest average mean with 1.86 (see Table 5.5 above). Table 5.13 shows that the mean of this category is 14.88 scores, and the disclosure information on “health and safety incidents and accidents” has the highest score over the eight items included in

this category. The mean of scores of this item is 2.70, while the lowest score was for toxic hazard (1.11 score).

Table 5.13
Descriptive of Health and Safety Disclosure Items

| Items | Min. | Max. | Sum | Mean | Std. Deviation |
|---|----------|-----------|-------------|--------------|----------------|
| Employee health and safety policy | 2 | 3 | 238 | 2.05 | .222 |
| Health and safety laws and regulations | 0 | 3 | 228 | 1.97 | .347 |
| Health and safety management systems | 0 | 3 | 204 | 1.76 | .730 |
| Health and safety at work | 0 | 3 | 247 | 2.13 | .880 |
| Toxic hazard | 0 | 3 | 129 | 1.11 | 1.070 |
| Health and safety training | 0 | 3 | 206 | 1.78 | 1.072 |
| Health and safety auditing | 0 | 3 | 161 | 1.39 | 1.011 |
| Health and safety incidents and accidents | 0 | 3 | 313 | 2.70 | .531 |
| Total | 6 | 21 | 1726 | 14.88 | 3.182 |
| <i>Average Mean</i> | | | | <i>1.86</i> | |

With respect to all disclosure items, from the tables above, it can be seen that “conservation of natural resources” represents the highest disclosure quality with mean of 2.78, followed by “air emission information” and “health and safety incidents and accidents” with means of 2.71 and 2.7 respectively. On the other hand, “future environmental operating costs” represents the lowest disclosure quality with mean of 0.28, the second lowest item is “costs of treatment of spills” with mean of 0.34, and the third lowest item is “litigation” with mean of 0.40.

5.2.3.2.3 The Content-quality of Environmental Disclosure in Different Media

To determine the disclosure media that has the highest level of content-quality of environmental disclosure, the study also assessed the content-quality of environmental disclosure of each reporting medium by determining the average scores for each. This analysis gives a clear understanding of the disclosure media that oil and gas companies in developing countries prefer to use as vehicle for their environmental disclosure. Table 5.14 shows that the level of content-quality of

environmental disclosure in the three media has a wide range. While the minimum disclosure obtained is 13 scores for the annual reports and the same for the homepages, the maximum is 106 scores for the stand-alone. Also, for each investigated medium a wide range of environmental disclosure content-quality can be noted. Thus, the content-quality of environmental disclosure in annual reports ranges from 13 to 96 scores, in stand-alone reports ranges from 20 to 106, while it ranges from 13 to 75 scores in homepages. It can be seen that stand-alone reports have the highest mean of scores of environmental disclosure with 65.64 scores followed by annual reports with 52.63 scores, and finally, homepages with 38.53 scores. Thus, there is a variation in the content-quality of environmental disclosure among the three mediums, with the highest scores in stand-alone reports.

Table 5.14

Descriptive Statistics of Quality of Environmental Disclosure in the Different Media

| Reporting Mediums | N | Min. | Max. | Mean | Std. Deviation |
|---------------------|-----|-------|--------|---------|----------------|
| Annual Reports | 116 | 13.00 | 96.00 | 52.6293 | 15.40386 |
| Stand-alone Reports | 116 | 20.00 | 106.00 | 65.6379 | 17.03520 |
| Homepages | 116 | 13.00 | 75.00 | 38.5345 | 14.29286 |

5.2.3.3 Descriptive Statistics of Independent Variables

The descriptive statistics for the explanatory variables are presented in Tables 5.15 and 5.16. Table 5.15 shows the frequencies and percentages for the categorical independent variables, while Table 5.16 shows the minimum, maximum, mean and std. deviation for the continuous independent variables.

Table 5.15

Descriptive Statistics for All Dichotomous Variables

| Variables | | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------|-------|-------|-----------|---------|---------------|--------------------|
| TYPKO | Valid | 0 | 6 | 5.2 | 5.2 | 5.2 |
| | | 1 | 110 | 94.8 | 94.8 | 100.0 |
| | | Total | 116 | 100.0 | 100.0 | |
| CLSMAR | Valid | 0 | 34 | 29.3 | 29.3 | 29.3 |
| | | 1 | 82 | 70.7 | 70.7 | 100.0 |
| | | Total | 116 | 100.0 | 100.0 | |
| MULTINA | Valid | 0 | 51 | 44.0 | 44.0 | 44.0 |
| | | 1 | 65 | 56.0 | 56.0 | 100.0 |
| | | Total | 116 | 100.0 | 100.0 | |
| ENVCERT | Valid | 0 | 37 | 31.9 | 31.9 | 31.9 |
| | | 1 | 79 | 68.1 | 68.1 | 100.0 |
| | | Total | 116 | 100.0 | 100.0 | |
| MWMSHIP | Valid | 0 | 51 | 44.0 | 44.0 | 44.0 |
| | | 1 | 65 | 56.0 | 56.0 | 100.0 |
| | | Total | 116 | 100.0 | 100.0 | |

Table 5.15 shows the characteristic of the study's sample. The majority of the study sample comprised *single company* (94.8%, n=110). About seventy-one percent of the companies (n=82) dealt with brand and/or has retail sales. More than half of companies (56.0%) were subsidiaries of international firms or has operations outside its country of origin. Most companies have environmental certificates (68.1%) and more than half of them were members of industry associations (56.0%).

Table 5.16

Descriptive Statistics for All Continuous Variables

| Variables | N | Min. | Max. | Mean | Std. Deviation |
|--------------------|-----|-------------|---------|-----------|----------------|
| SIZE\$ | 116 | 33161507.00 | 3.03E11 | 1.8825E10 | 4.52891E10 |
| OWNCONC | 116 | .1000 | 1.0000 | .533362 | .1999432 |
| FOROWN | 116 | .0000 | .7000 | .316293 | .1508615 |
| INSTITOWN | 116 | .0000 | 1.0000 | .530690 | .2387530 |
| STATOWN | 116 | .0000 | 1.0000 | .412155 | .2284763 |
| PROFIT | 116 | .0300 | .1900 | .110603 | .0386802 |
| LEV | 116 | .0000 | .8500 | .481121 | .1991450 |
| Valid N (listwise) | 116 | | | | |

Table 5.16 shows the descriptive statistics (minimum, maximum, mean and std. deviation) for continuous variables. It reveals that, company size (total assets) ranges

from USD 33 million to USD 303 billion with an average of USD 18.8 billion. More than half of shares (53%) were owned by the top five shareholders in the company. About one third of shares (31.6%) were owned by foreigners. More than half of shares (53%) of the companies were owned by institutional shareholders while, forty one percent of companies shares were held by governments. The profit margin was around 11%, and the mean of the leverage was 48%.

5.2.4 Univariate and Multivariate Statistics

Next, the data was analyzed using inferential statistics (univariate and multivariate). The objectives of the univariate and multivariate analysis are to know if the dependent variable is influenced by a set of independent variables individually, and to determine the extent and direction of influence of these independent variables simultaneously on the dependent variable.

Thus, univariate analysis of variance (ANOVA) is appropriate to test hypothesis 1, where the means of environmental disclosure content-quality in three disclosure mediums (AN, STAN and HOM) are compared.

Under the univariate analysis, Pearson correlation is used to examine the association between the dependent variable (environmental disclosure content-quality) and each of the twelve independent variables, while multiple regression is employed to examine how the twelve independent variables all together (simultaneously) relate to the dependent variable (Hypotheses 2-13). These tests are conducted as follows:

5.2.4.1 One-Way Analysis of Variance (ANOVA)

In this study, one-way analysis of variance is used to compare the means of environmental disclosure content-quality in three reporting mediums (AN, STAN and HOM). In order to use One-Way ANOVA the normality and homogeneity of variance were tested. Testing of these two assumptions are presented in the following paragraphs.

5.2.4.1.1 ANOVA Assumptions Testing

5.2.4.1.1.1 Test of Normality

Based on discussion in chapter four, both visual and statistics are used to assess the normality. Thus, graphical histogram and plots and statistical tests were used in this study. Skewness and Kurtosis values (between -1.0 and + 1.0), and standard errors for skewness and Kurtosis ratios (between ± 1.96) were used. In addition, the Kolmogorov-Smirnov test (K-S) and Shapiro-Wilk (S-W) test (with a significant value of more than 0.05) were applied as presented below.

AN

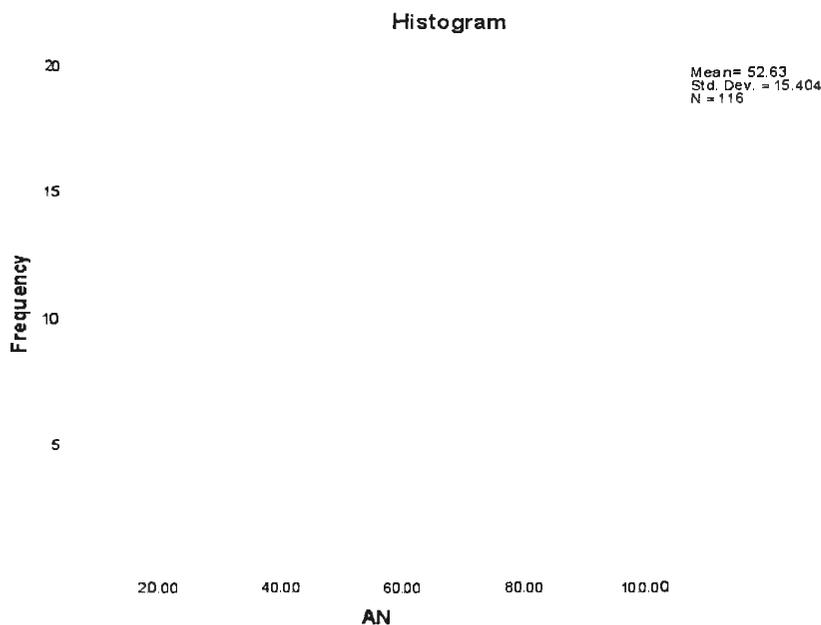


Figure 5.1
Frequency Distribution- AN
STAN

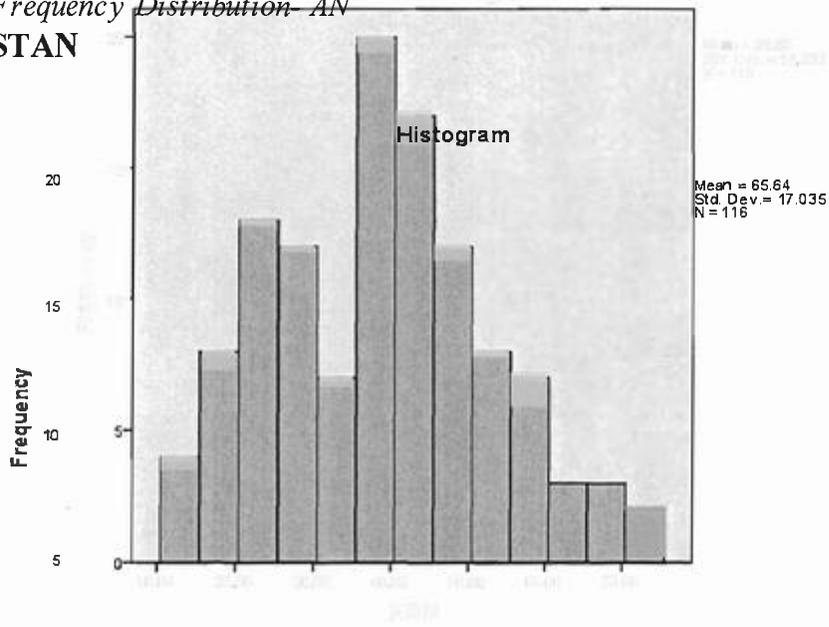


Figure 5.2
Frequency Distribution- STAN

HOM

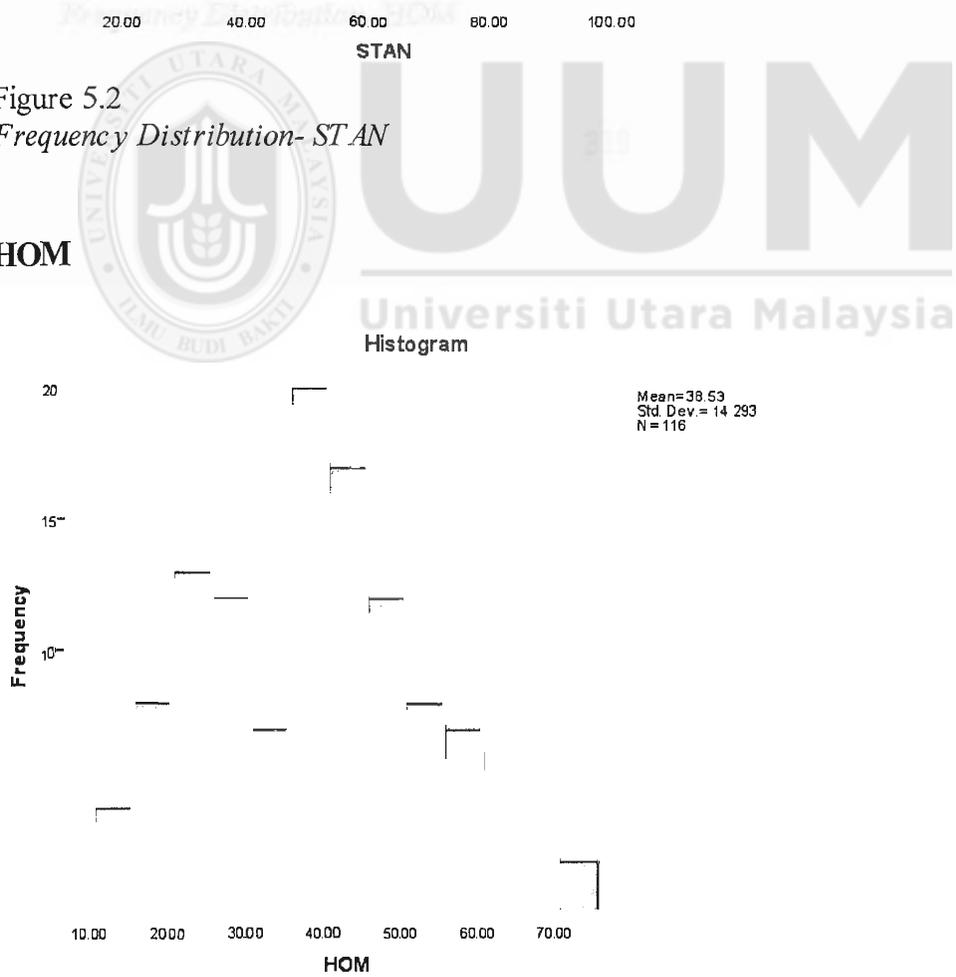


Figure 5.3
Frequency Distribution- HOM

By looking at the Histograms (bell shaped), it can be seen that the normality of the data distributions can be considered as acceptable.

The following tables present the results of normality tests:

Table 5.17
Skewness Kurtosis Tests for Normality

| | N | Skewness | | Kurtosis | |
|------|-----|-----------|------------|-----------|------------|
| | | Statistic | Std. Error | Statistic | Std. Error |
| AN | 116 | 0.158 | 0.225 | -0.182 | 0.446 |
| STAN | 116 | -.087 | 0.225 | -0.373 | 0.446 |
| HOM | 116 | 0.238 | 0.225 | -0.478 | 0.446 |

Table 5.17 shows Skewness and Kurtosis values test, where all of the variables can be considered as normally distributed because p-values fall between ± 1.0 , standard errors for Skewness and Kurtosis ratios fall between ± 1.96 .

Table 5.18
Test of Normality for Environmental Disclosure

| | N | Kolmogorov-Smirnov ^a | | Shapiro-Wilk | |
|------|-----|---------------------------------|-------|--------------|------|
| | | Statistic | Sig. | Statistic | Sig. |
| AN | 116 | .076 | .093 | .992 | .780 |
| STAN | 116 | .068 | .200* | .988 | .372 |
| HOM | 116 | .068 | .200* | .979 | .066 |

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Table 5.18 shows the result of the Kolmogorov-Smirnov and Shapiro-Wilk test, where all of the variables can be considered as normally distributed because p-values are above 0.05 (Coakes *et al.*, 2010). Thus, according to graphical (Histogram,) and non-graphical (Skewness and Kurtosis, and Kolmogorov-Smirnov and Shapiro-Wilk) tests, the results show that the distributions of all variables are fairly normal.

5.2.4.1.1.2 Test of Homogeneity of Variance

The Variance Homogeneity test ensures that the variance of the demeaned critical time series doesn't change over time. To test homogeneity of variance the Levene's F Test for Equality of Variances was employed as it is the most extensively used statistic to examine homogeneity of variance.

Thus, Levene's test is designed to test the null hypothesis that the variances of the groups are the same (no difference). In this case Levene's test examines whether the variances of the three groups are significantly different.

Table 5.19
Test of Homogeneity of Variances

Total Scores

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 2.522 | 2 | 345 | .082 |

From the table above, it is evident that the F value for Levene's test is 2.522 with a Sig. (p) value = .082 ($>.05$). As the Sig. value is over alpha of .05 ($p > .05$), the null hypothesis cannot be rejected for the assumption of homogeneity of variance and reach to the conclusion that no significant difference lies between the variances of the three groups. In other words, the homogeneity of variance assumption is satisfied. It is evident from the above explanation that the One-Way ANOVA assumptions are satisfied, and this indicates the suitability of using the statistical technique for testing hypothesis 1.

5.2.4.1.2 Result for One-Way Analysis of Variance (ANOVA)

A one-way analysis of variance (ANOVA) has been conducted for the environmental disclosure score to test whether there are any significant differences

among the means of the environmental disclosure scores for the various reporting mediums (namely, annual reports, stand-alone reports and corporate homepages). The F-ratio, equal to 87.384, and a p-value = 0.000 (< 0.05) indicate that there is a statistically significant difference between the mean environmental disclosure score from one mediums to another at the 95.0% confidence level (see Table 5.20). Therefore, it is concluded that there is a statistically significant difference among the three mediums of environmental disclosure.

Table 5.20
Summary of ANOVA
 Total Scores

| | Sum of Squares | Df | Mean Square | F | Significance |
|----------------|----------------|-----|-------------|--------|--------------|
| Between Groups | 42629.431 | 2 | 21314.716 | 87.384 | .000 |
| Within Groups | 84152.716 | 345 | 243.921 | | |
| Total | 126782.147 | 347 | | | |

One-way ANOVA (see Table 5.20 above) and descriptive statistics results (see Table 5.14 above) showed that the disclosure mediums were statistically different for the environmental disclosure content-quality. Means ranged from 38.53 to 65.64 ($p = 0.000$) indicating that environmental disclosures do differ from medium to medium. As P-values of 0.00 is less than the criterion value of 0.05., it can be concluded that there is a statistically significant difference among the means for the disclosure index for the three disclosure mediums and that there is a statistically significant difference among the three mediums of environmental disclosure.

Because the test was significant, Post hoc LSD multiple comparisons were conducted to determine where differences between means existed. The analysis (see Table 5.21) revealed that the mean of environmental disclosure in stand-alone reports was statistically significantly higher than in other mediums.

Table 5.21
LSD Multiple Comparison
 Total Scores

| (I) Disclosure Medium | (J) Disclosure Medium | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|-----------------------|-----------------------|-----------------------|------------|------|-------------------------|-------------|
| | | | | | Lower Bound | Upper Bound |
| AN | STAN | -13.00862* | 2.05074 | .000 | -17.0421- | -8.9751- |
| | HOM | 14.09483* | 2.05074 | .000 | 10.0613 | 18.1284 |
| STAN | AN | 13.00862* | 2.05074 | .000 | 8.9751 | 17.0421 |
| | HOM | 27.10345* | 2.05074 | .000 | 23.0699 | 31.1370 |
| HOM | AN | -14.09483* | 2.05074 | .000 | -18.1284- | -10.0613- |
| | STAN | -27.10345* | 2.05074 | .000 | -31.1370- | -23.0699- |

*The mean difference is significant at the 0.05 level.

5.2.4.2 Pearson Correlation Analysis

Correlation analysis is a statistical method used to describe the strength and direction of the linear relationship between two variables (Pallant, 2001). Weak correlations exist when the absolute value of Pearson correlation (r) falls between 0.1 and 0.299; moderate correlations exist when the absolute value of r falls between 0.3 and 0.499; strong correlations exist when the absolute value of r falls between 0.5 to 1 (Cohen, 1988). Thus, in this study, Pearson correlation was employed to determine the relationship between each of the variables.

5.2.4.2.1 Pearson Correlation Results

Table 5.22 presents the results of the Pearson correlation analysis

Table 5.22 shows that r values; SIZELg10 ($r = 0.808$), OWNCONC ($r = -0.572$), FOROWN ($r = 0.587$), INSTITOWN ($r = -0.608$), STATOWN ($r = -0.601$), PROFIT ($r = 0.646$), LEV ($r = 0.800$), and MWMSHIP ($r = 0.568$) are strongly correlated with the dependent variable (Total Scores). Moreover, CLSMAR ($r = 0.452$) and MULTINA ($r = 0.473$) are moderately significant towards Total Scores, while TYPOC ($r = 0.199$) and ENVCREAT ($r = 0.147$) are weakly correlated with the dependent variable.

The results from Pearson correlation indicate that, SIZELg10, CLSMAR, OWNCONC, FOROWN, INSTITOWN, STATOWN, PROFIT, LEV, MULTINA and MWMSHIP are significantly correlated with the content-quality of environmental disclosure (Total Score) at 0.01 level, while TYPCO and ENVCERT were found to be insignificant.

Thus, the univariate analysis shows that ten of the twelve explanatory variables have significant associations with the dependent variable. Specifically, the results of Pearson correlation revealed that, size of company, close to market, foreign ownership, profitability, leverage, multi-nationality and membership of industry's associations, are positively related with content-quality of environmental disclosure ($p < 0.01$, two-tailed). Ownership concentration, institutional ownership and state ownership, are negatively related to the content-quality of environmental disclosure ($p < 0.01$, two-tailed) and type of company is marginally positively related with the content-quality of environmental disclosure at a significance level of 0.05. Inconsistent with prediction, environmental certification is not related to the content-quality of environmental disclosure. Also, the relationships are mostly in the

Before running the multiple regression analysis, there are some assumptions which must be satisfied. These are normality, linearity, homoscedasticity, multicollinearity (Hair, *et al.*, 2006) and autocorrelation (Gujarati, 1995). These assumptions were examined as follows:

5.2.4.3 Multivariate Regression Analysis

To examine the relationship between the dependent variable (environmental disclosure content-quality) and the independent variables (size of company, type of company, close to market, ownership concentration, foreign ownership, institutional ownership, state ownership, profitability, leverage, multi-nationality/ international experience, environmental certification, and membership of industry's associations) simultaneously, the multivariate regression analysis using ordinary least squares was performed.

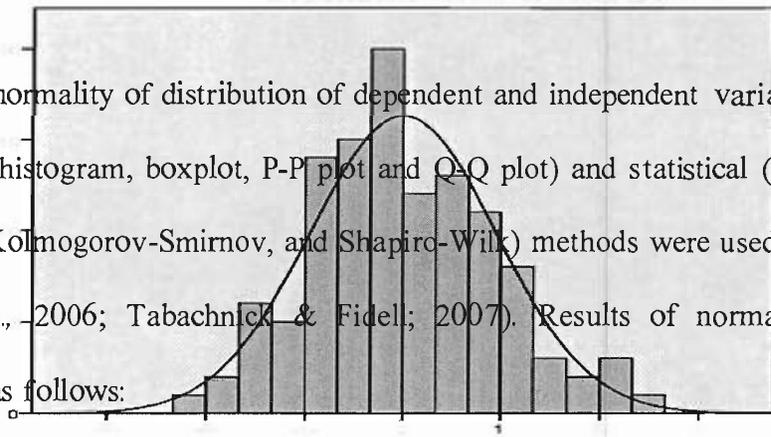
5.2.4.3.1 Assumptions Testing

Before running the multiple regression analysis, there are some assumptions which must be satisfied. These are normality, linearity, homoscedasticity, multicollinearity (Hair, *et al.*, 2006) and autocorrelation (Gujarati, 1995). These assumptions were examined as follows:

5.2.4.3.1.1 Test of Normality

Normality is considered to be the top most significant assumption in multivariate analysis. It refers to the level to which the sample data distribution satisfies normal distribution (Hair, *et al.*, 2006). It refers to the fact that the residuals (errors) should be normally distributed. Thus, before applying statistical methods that assume normality such as univariate and multivariate analyses, it is necessary to perform a normality test on the data.

To assess normality of distribution of dependent and independent variables, both the graphical (histogram, boxplot, P-P plot and Q-Q plot) and statistical (Skewness and Kurtosis, Kolmogorov-Smirnov, and Shapiro-Wilk) methods were used (Field, 2009; Hair *et al.*, 2006; Tabachnick & Fidell; 2007). Results of normality tests are presented as follows:



5.2.4.3.1.1.1 Visual Check of Normality

Normality was first checked by looking at the Histogram of the distribution of the residuals and P-P plot of regression of standardized residuals. Thus, Figure 5.4 reveals that the approximation of distribution follows a normal curve indicating normality assumption. Figure 5.5 shows that the entire values form a straight line and this confirms a normally distributed population.

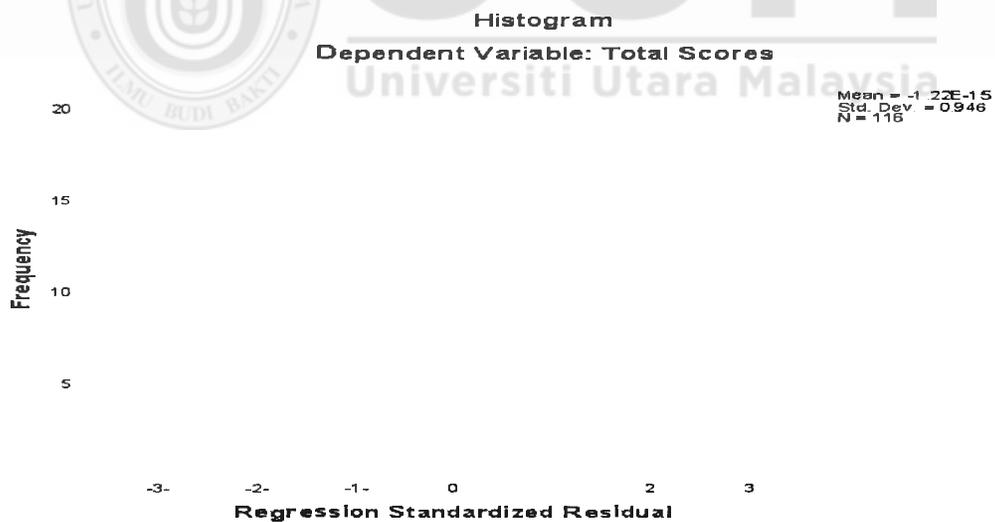


Figure 5.4
Histogram for the Statistic Test Result

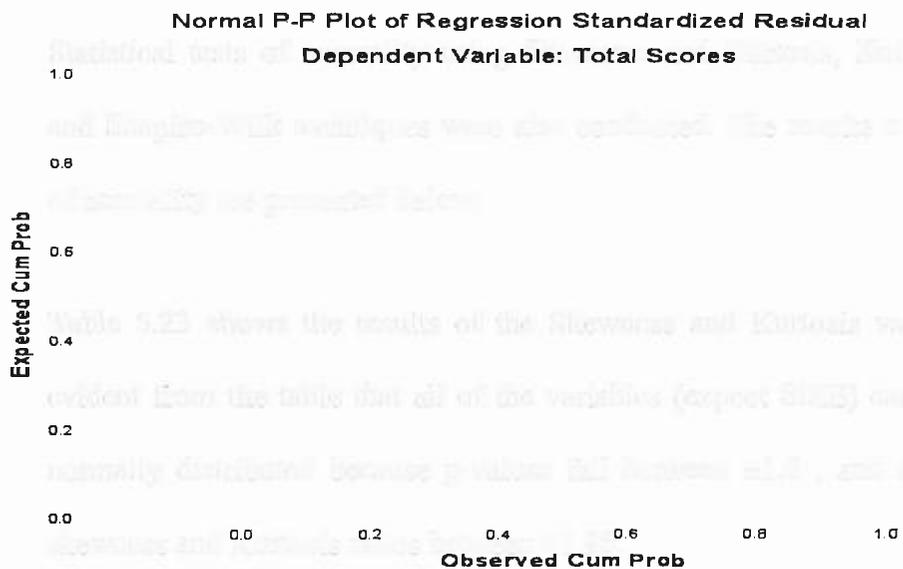


Figure 5.5
Normal P-P for the Statistic Test Result

Moreover, graphical checking of normality was conducted for each variable individually (see Appendix 7), which revealed that, data of all variables are normally distributed except for SIZE.

5.2.4.3.1.1.2 Statistical Test of Normality

Statistical tests of normality using Skewness and Kurtosis, Kolmogorov-Smirnov, and Shapiro-Wilk techniques were also conducted. The results of the statistical test of normality are presented below:

Table 5.23 shows the results of the Skewness and Kurtosis values test and it is evident from the table that all of the variables (except SIZE) can be considered as normally distributed because p-values fall between ± 1.0 , and standard errors for skewness and Kurtosis ratios between ± 1.96 .

Table 5.23
Skewness and Kurtosis Tests for Normality (raw data)

| Variables | N | Skewness | | Kurtosis | |
|--------------------|-----|-----------|------------|-----------|------------|
| | | Statistic | Std. Error | Statistic | Std. Error |
| Total Scores | 116 | .050 | .225 | -.735 | .446 |
| SIZE\$ | 116 | 4.722 | .225 | 25.782 | .446 |
| OWNCONC | 116 | .161 | .225 | -.212 | .446 |
| FOROWN | 116 | .115 | .225 | -.036 | .446 |
| INSTITOWN | 116 | .118 | .225 | -.238 | .446 |
| STATOWN | 116 | .197 | .225 | -.160 | .446 |
| PROFIT | 116 | .063 | .225 | -.587 | .446 |
| LEV | 116 | -.255 | .225 | -.575 | .446 |
| Valid N (listwise) | 116 | | | | |

Table 5.24 shows Kolmogorov-Smirnov and Shapiro-Wilk test results. The table presents that all variables (except SIZE) can be considered as normally distributed because p-values are above 0.05 (Coakes *et al.*, 2010).

Table 5.24
Kolmogorov-Smirnov and Shapiro-Wilk Tests for Normality (raw data)

| Variables | N | Kolmogorov-Smirnov ^a | | Shapiro-Wilk | |
|--------------|-----|---------------------------------|-------|--------------|------|
| | | Statistic | Sig. | Statistic | Sig. |
| Total Scores | 116 | .073 | .192 | .983 | .152 |
| SIZE\$ | 116 | .339 | .000 | .430 | .000 |
| OWNCONC | 116 | .059 | .200* | .987 | .328 |
| FOROWN | 116 | .069 | .200* | .988 | .408 |
| INSTITOWN | 116 | .080 | .062 | .978 | .054 |
| STATOWN | 116 | .064 | .200* | .979 | .062 |
| PROFIT | 116 | .068 | .200* | .980 | .088 |
| LEV | 116 | .064 | .200* | .981 | .104 |

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Thus, according to graphical (histogram, box plot, P-P plot and Q-Q plot) and non-graphical (Skewness and Kurtosis, and Kolmogorov-Smirnov and Shapiro-Wilk)

tests, the results show that the distributions of all variables (except SIZE) are fairly normal.

5.2.4.3.1.1.3 Transformation of Data

By looking at the histogram, box plot, P-P plot and Q-Q plot (see Appendix 7), and as shown before in Table 5.23 and Table 5.24 the data of variable of SIZE does not conform to a classic normal distribution because its Skewness and Kurtosis values fall outside the acceptable range (between -1.0 and +1.0) and K-S and S-W P values are lower than 0.05.

When skewness and kurtosis are extreme, transformation is an option. Thus, following previous studies (cf. Ahmed and Nicholls, 1994; A khtaruddin, 2010; Alias, 2001; Jindal and Kumar, 2012; Lassaad and Khamoussi, 2012; Wallace and Naser, 1995), company size (SIZE) was transformed using the log of assets. Table 5.25 presents data for study sample after transformation. As the distribution of the observed data for variable of SIZE (Total Asset) is substantially positively skewed, a log transformation was employed (Tabachnick and Fidell 2007).

Table 5.25

Data Transformation for Size

| Variable | Transformation |
|-----------------|---------------------------------|
| Size | Log: SIZE_{Lg10} |

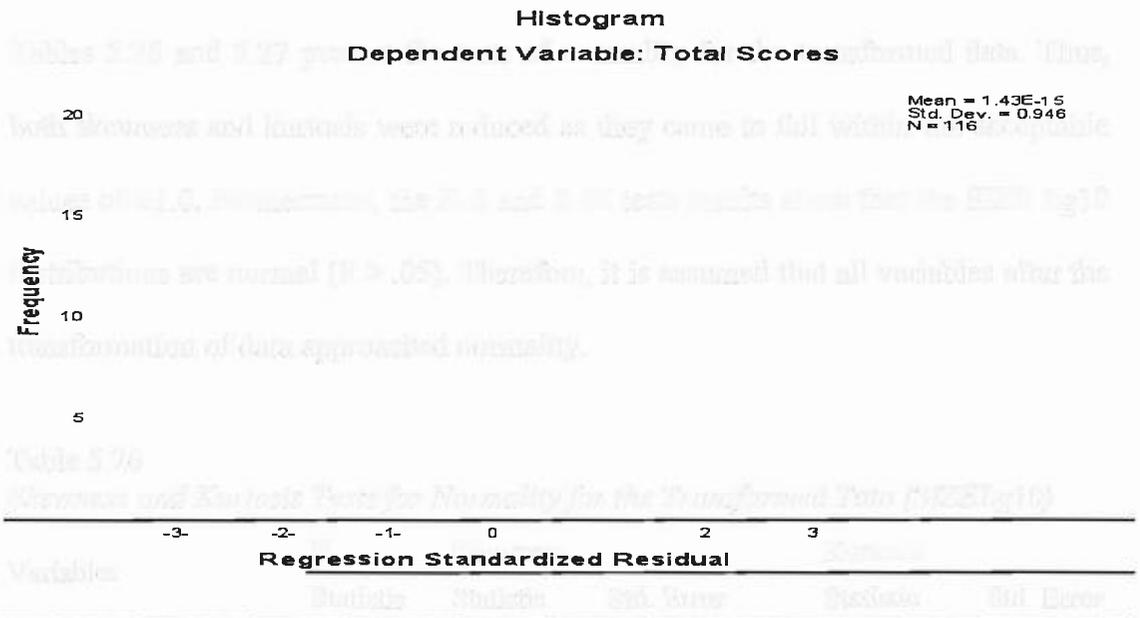


Figure 5.6
Histogram for the Statistic Test Result

As can be seen from Figure 5.6 above, the data after transformation of size variable is normally distributed. Also, histogram and normal P-P of size after transformation (see Appendix 7) conform to the normal distribution of data.

Tables 5.26 and 5.27 present the tests of normality for the transformed data. Thus, both skewness and kurtosis were reduced as they came to fall within the acceptable values of ± 1.0 . Furthermore, the K-S and S-W tests results show that the SIZE Lg10 distributions are normal ($P > .05$). Therefore, it is assumed that all variables after the transformation of data approached normality.

Table 5.26
Skewness and Kurtosis Tests for Normality for the Transformed Tata (SIZELg10)

| Variables | N | Skewness | | Kurtosis | |
|--------------|-----------|-----------|------------|-----------|------------|
| | Statistic | Statistic | Std. Error | Statistic | Std. Error |
| Total Scores | 116 | .050 | .225 | -.735 | .446 |
| SIZELg10 | 116 | .028 | .225 | -.666 | .446 |
| OWNCONC | 116 | .161 | .225 | -.212 | .446 |
| FOROWN | 116 | .115 | .225 | -.036 | .446 |

Table 5.26 Continued

| | | | | | |
|--------------------|-----|-------|------|-------|------|
| INSTITOWN | 116 | .118 | .225 | -.238 | .446 |
| STATOWN | 116 | .197 | .225 | -.160 | .446 |
| PROFIT | 116 | .063 | .225 | -.587 | .446 |
| LEV | 116 | -.255 | .225 | -.575 | .446 |
| Valid N (listwise) | 116 | | | | |

Table 5.27

Kolmogorov-Smirnov and Shapiro-Wilk Tests for Normality for the Transformed Data (SIZELg10)

| Variables | N | Kolmogorov-Smirnov ^a | | Shapiro-Wilk | |
|--------------|-----|---------------------------------|-----------|--------------|-----------|
| | | Statistic | Statistic | Sig. | Statistic |
| Total Scores | 116 | .073 | .192 | .983 | .152 |
| SIZELg10 | 116 | .056 | .200* | .987 | .352 |
| OWNCONC | 116 | .059 | .200* | .987 | .328 |
| FOROWN | 116 | .069 | .200* | .988 | .408 |
| INSTITOWN | 116 | .080 | .062 | .978 | .054 |
| STATOWN | 116 | .064 | .200* | .979 | .062 |
| PROFIT | 116 | .068 | .200* | .980 | .088 |
| LEV | 116 | .064 | .200* | .981 | .104 |

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

5.2.4.3.1.2 Linearity

To check the linearity between the dependent and independent variables, an examination of the scatter plot of residuals against a predicted value for the model has conducted. The result of linearity shown in Figure 5.7 shows no evidence of nonlinear relationship between the dependent variable and the independent variables and therefore the assumption of linearity was not violated.



Figure 5.7
Linearity Test for Total Scores

5.2.4.3.1.3 Homoscedasticity

Homoscedasticity is an assumption of multivariate analysis, which means that the variance of the dependent variable is the same for all the data. A visual examination of a plot of standardized residuals was conducted through regression standardized predicted value in order to examine homoscedasticity, and statistical tests (Levene's test) were performed as explained below.

5.2.4.3.1.3.1 Scatter Plot Test

Heteroscedasticity detection entailed the plotting of the model residuals against the predicted value of the total score of environmental disclosure and against individual explanatory variable to identify whether or not the model error terms possessed constant variances.

According to Tabachnick and Fidell (2007), in the scatter plot of the standardized residuals, the residuals should be roughly rectangularly distributed, with most of the

scores concentrated in the center without a clear or systematic pattern such as curvilinear.

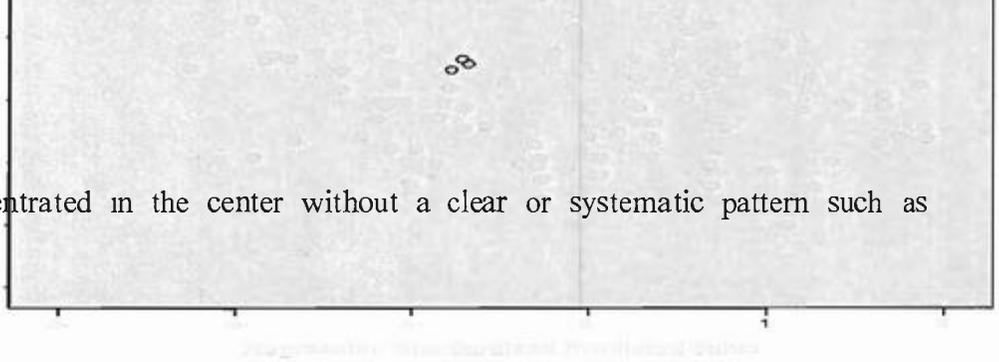


Figure 5.8 shows the scatterplot for data homoscedasticity between the predicted dependent variable and the independent variables in which Y axis is standardized regression residual, while X axis is the standardized regression predicted value. It is apparent that the spread of data does not form a certain pattern and data is spread around the null number. Thus, the scatter plot graphs indicate that the data used in this study are considered free from heteroscedasticity (Hair *et al.*, 2006).

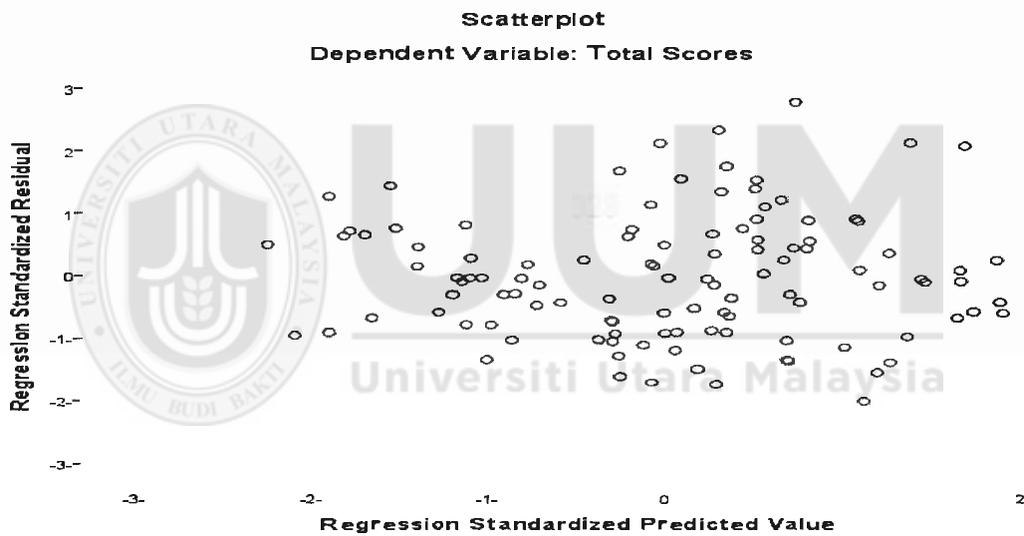


Figure 5.8
Scatter Plot of Heteroscedasticity Test

5.2.4.3.1.3.2 Levene's Test for Homogeneity

The Levene's test was also used to test the assumption of homogeneity of variance.

Table 5.28 presents the results of homogeneity of variances test.

Table 5.28
Test of Homogeneity of Variances
 Total Scores
 IVs

| IVs | Levene Statistic | df1 | df2 | Sig. |
|-----------|------------------|-----|-----|------|
| SIZELg10 | 4.062 | 36 | 74 | .000 |
| OWNCONC | 1.700 | 28 | 69 | .039 |
| FOROWN | 1.826 | 32 | 70 | .019 |
| INSTITOWN | 2.539 | 35 | 66 | .001 |
| STATOWN | 1.132 | 34 | 71 | .324 |
| PROFIT | .854 | 15 | 99 | .616 |
| LEV | 3.018 | 35 | 68 | .000 |

As shown above, the Sig. (p) values of most of variables are less than alpha of .05 ($p < .05$). The null hypothesis for the assumption of homogeneity of variance is rejected because the Sig. value is lower than alpha of 0.05 ($p < 0.05$) and the alternative hypothesis of the assumption of heteroskedastic variance is accepted. Stated simply, the homogeneity assumption is violated.

As presented before, scatter plot test and Levene's test were used to check for heteroskedasticity. Scatter plot test found that there is no heteroskedasticity problem while Levene's test revealed that there is a presence of heteroskedasticity. Given that these contradictory results, it was assumed that the heteroskedasticity is mild (Katmun, 2012).

Thus, this problem of heteroskedasticity should be dealt with. The heteroskedasticity can be resolved using one of the common techniques such as, data transformation, weighted least square approach, or robust standard errors technique (Berry and Feldman, 1985; Hair et al., 2006).

According to Berry and Feldman (1985), robust standard errors tend to be more trustworthy, as the majority of empirical researches use this technique. Allison

(1999) argued that robust standard errors appear to be an extensive technique used to deal with heteroskedastic issues.

Based on the above, and following previous studies (cf. Akrouf and Othman, 2013; Katmun, 2012; Lu and Abeysekera, 2014), the problem of heteroscedasticity was treated with the White's test via Stata software. The results of robustness test (White) via Stata will be presented and interpreted later in this chapter.

5.2.4.3.1.4 Test of Multicollinearity

Multicollinearity refers to a condition in which there is a high correlation between some or all of the independent variables in a multiple regression (Cooper and Emory, 1995). This problem affects the interpretation of relationships between the predictors and the dependent variable. To examine multicollinearity between the independent variables, several techniques are used, they include, Pearson correlation (correlation matrix), Tolerance Value and Variance Inflation Factor "VIF" (Hair *et al.*, 2006).

Multicollinearity is identified if any of the squared multiple correlations are near or equal to 1 (Coakes *et al.*, 2010). Field (2009) explained that if correlations are above 0.8 or 0.9, multicollinearity exists. Others pointed that, a correlation of 0.90 and above indicate a serious problem (Hair *et al.*, 2006; Pallant, 2001). The common cut off threshold is a tolerance value of 0.1, which corresponds to a VIF value of 10. If the tolerance coefficient is less than 0.1, multicollinearity can exist, and if VIF is greater than 10 it indicates that the regression model may be biased by multicollinearity (Coakes *et al.*, 2010; Hair *et al.*, 2006). Thus, the tolerance value of

more than 0.1 and the VIF value of less than 10 are acceptable values for multicollinearity.

To examine the multicollinearity problem, three techniques are used namely Pearson-Correlation Matrix, Tolerance and Variance Inflation Factor (VIF). In this study, multicollinearity between the explanatory variables was examined using Pearson correlation matrix, Tolerance Value and Variance Inflation Factor, the results of which are presented as follows:

5.2.4.3.1.4.1 Pearson Correlation between the independent variables

As shown before in Table 5.22, all variables obtained correlations of less than 0.9. Therefore, according to Hair *et al.* (2006) and Pallant (2001), the independent variables do not possess any harmful multicollinearity in the regression model.

5.2.4.3.1.4.2 Tolerance and Variance Inflation Factor (VIF)

Tolerance Value and Variance Inflation Factor (VIF) was also used to test multicollinearity between the independent variables. Table 5.29 provides the Tolerance and VIF values for independent variables. The table shows that, the Tolerance values are more than 0.10 and the VIF values are less than 10. These values are acceptable values for multicollinearity (Coakes *et al.*, 2010; Hair *et al.*, 2006). Therefore, it can be concluded that no harmful indicators were obtained from the results and there is no multicollinearity problem.

Table 5.29

Tolerance and VIF for Test of Multicollinearity^a

| Variable | Collinearity Statistics | |
|-----------|-------------------------|-------|
| | Tolerance | VIF |
| SIZELg10 | 0.458 | 2.184 |
| TYPOC | 0.759 | 1.317 |
| CLSMAR | 0.712 | 1.404 |
| OWNCONC | 0.215 | 4.647 |
| FORCONC | 0.600 | 1.668 |
| INSTITOWN | 0.251 | 3.985 |
| STATOWN | 0.194 | 5.153 |
| PROFIT | 0.564 | 1.773 |
| LEV | 0.390 | 2.563 |
| MULTINA | 0.716 | 1.396 |
| ENVCREAT | 0.839 | 1.191 |
| MWMSHIP | 0.660 | 1.514 |

a. Dependent Variable: Total Scores

5.2.4.3.1.5 Test of Autocorrelation

The Durbin-Watson (DW) test is commonly used as a statistical test for detecting autocorrelation (Kazmier, 2003). So, to detect if there is any autocorrelation in the data set used in this study, Durbin-Watson test was employed. The value of the Durbin-Watson test statistic can range from 0 to 4.0, and is approximately 2.0 when there is no autocorrelation present with respect to the residual (Kazmier, 2003). In general, the DW value that is below 1.4 or greater than 2.6 indicates the existence of autocorrelation among variables (Kazmier, 2003). In other words, values of DW which is above 1.4 and below 2.6 provides evidence on non-existence of autocorrelation for a model. As shown in Table 5.30, the Durbin Watson value is 1.981, which indicates that the data has no serial autocorrelation problem.

5.2.4.3.2 Multiple Regression Analysis

The multiple regression analysis refers to a basic statistical method utilized for the analysis of the relationship between one dependent variable and many independent variables (Hair *et al.*, 2006). Several methods are contained in the multiple regression

method including standard regression, hierarchical or sequential and stepwise regression (Pallant, 2001).

This study aims to test the relationships between environmental disclosure content-quality and twelve independent variables, where all independent variables are assumed of equal importance. So, the standard multiple regressions where all of the independent variables are entered into the equation simultaneously and assumed to be of equal importance was chosen as an appropriate method (Pallant, 2001; Tabachnick & Fidell, 2007).

5.2.4.3.2.1 Results of Multiple Regression Analysis

The results from multiple regressions (see table 5.30) showed that the model is statistically significant ($R^2 = 0.854$, $F = 50.195$, $P = 0.000$). This indicates that the relationships between the dependent variable (Total Scores), and the independent variables SIZELg10 ($t = 6.744$, $p=0.000$), FOROWN ($t = 2.067$, $p=0.041$), PROFIT ($t = 2.426$, $p=0.017$), LEV ($t= 4.690$, $p < 0.000$) and MWMSHIP ($T= 2.313$, $p = 0.023$) are statistically significant at the 0.05 level. The remaining variables (TYPKO, CLSMAR, OWNCONC, INSTITOWN, STATOWN, MULTINA, and ENVCERT) were found to be not significant in the multiple regressions.

Table 5.30
Results of Multiple Regressions^a

| Variable | Hypothesis | B | Beta | T | Sig. (2-tailed) |
|-----------|------------|--------|--------|--------|-----------------|
| SIZELg10 | H2 | 6.593 | 0.375 | 6.744 | 0.000 |
| TYPKO | H3 | -1.724 | -0.025 | -0.572 | 0.569 |
| CLSMAR | H4 | 0.348 | 0.010 | 0.230 | 0.819 |
| OWNCONC | H5 | 0.757 | 0.010 | 0.120 | 0.905 |
| FOROWN | H6 | 10.334 | 0.100 | 2.067 | 0.041 |
| INSTITOWN | H7 | -2.393 | -0.037 | -0.490 | 0.625 |
| STATOWN | H8 | -8.159 | -0.120 | -1.406 | 0.163 |
| PROFIT | H9 | 48.778 | 0.122 | 2.426 | 0.017 |

Table 5.30 Continued

| | | | | | |
|---------|-----|--------|-------|-------|-------|
| LEV | H10 | 22.023 | 0.283 | 4.690 | 0.000 |
| MULTINA | H11 | 2.270 | 0.073 | 1.639 | 0.104 |
| ENVCERT | H12 | 0.629 | 0.019 | 0.462 | 0.645 |
| MWMSHIP | H13 | 3.336 | 0.107 | 2.313 | 0.023 |

a. Dependent Variable: Total Scores of CQLEDIS

R Square 0.854

Adjusted R Square 0.837

F value 50.195

P-value 0.000

D-W 1.981

N 116

p < 0.05

As shown in table 5.30, it is apparent that some variables are able to explain the content-quality of environmental disclosure by oil and gas companies in developing countries, whereas some variables are not. Based on the results of the multivariate analysis, the R^2 under the model was 0.854 (significantly high). However, adjusted R^2 statistic corrects this value to provide a better estimate of the true population value, rather than the normal R^2 value (Tabachnick & Fidell, 2007). The results indicate that, the adjusted R^2 of the model was 0.837, implying that 83.70% of the variation in the dependent variable in the model is explained by variations in the independent variables.

However, the assumption of homogeneity of variance was violated in this study as discussed before (i.e. heteroskedasticity exists). According to Hair *et al.* (2006), if the heteroscedasticity issue is found, it can be resolved with the help of White heteroscedasticity Consistent Variance and Standard Error technique, weighted least square method or by data transformation.

Following previous studies (cf. Katmun, 2012; Marquis and Toffel, 2012; Naser, 1998) this problem was corrected using robust standard errors (White) via Stata

software. Robust regression analysis was also conducted to provide a reliable alternative to ordinary least squares regression model (Yaffee, 2002). Out puts of robust regression test are presented in Table 5.31 below.

Table 5.31

Robust Regression Result for Model

| Robust HC3 | | | | | | |
|---------------|-----------|-----------|-------|-------|------------|-----------|
| Total Scores | Coef. | Std. Err. | T | P> t | [95% Conf. | Interval] |
| SIZELg10 | 6.592538 | 1.238111 | 5.32 | 0.000 | 4.137038 | 9.048039 |
| TYPKO | -1.723674 | 2.958101 | -0.58 | 0.561 | -7.59037 | 4.143023 |
| CLSMAR | .347656 | 1.857628 | 0.19 | 0.852 | -3.336512 | 4.031824 |
| OWNCONC | .7566482 | 6.003515 | 0.13 | 0.900 | -11.14991 | 12.6632 |
| FOROWN | 10.33443 | 5.671986 | 1.82 | 0.071 | -0.9146197 | 21.58347 |
| INSTITOWN | -2.393163 | 5.010792 | -0.48 | 0.634 | -12.33089 | 7.544561 |
| STATOWN | -8.159422 | 5.978023 | -1.36 | 0.175 | -20.01542 | 3.696576 |
| LEV | 22.02292 | 5.771595 | 3.82 | 0.000 | 10.57633 | 33.46952 |
| PROFIT | 48.77788 | 23.61052 | 2.07 | 0.041 | 1.951987 | 95.60377 |
| MULTIN | 2.269772 | 1.398623 | 1.62 | 0.108 | -0.5040661 | 5.043611 |
| ENVCERT | .6293278 | 1.468272 | 0.43 | 0.669 | -2.282642 | 3.541298 |
| MWMSHIP | 3.335891 | 1.482252 | 2.25 | 0.027 | 0.3961935 | 6.275588 |
| CONS | -10.9556 | 9.967793 | -1.1 | 0.274 | -30.72437 | 8.813167 |
| R-squared | 0.854 | | | | | |
| RootMSE | 6.2645 | | | | | |
| Number of obs | 116 | | | | | |
| Prob> F | 0.000 | | | | | |

As shown in Table 5.31, $R^2 = 0.854$, and $P = 0.000$, which indicates that the model of this study is statistically significant. The results indicate that, SIZELg10 ($t = 5.32$, $p=0.000$), LEV ($t= 3.82$, $p = 0.000$), PROFIT ($t = 2.07$, $p=0.041$), MWMSHIP ($t = 2.25$, $p = 0.027$) are significantly associated with the dependent variable (Total Scores) at the 0.05 level. Whereas FOROWN ($t = 1.82$, $p=0.071$) was found to be significant at the 0.10 significant level (but not at the 0.05 level). Similar to the primary results, the robustness test results indicated that the variables of; TYPKO, CLSMAR, OWNCONC, INSTITOWN, STATOWN, MULTINA and ENVCERT were not found to be associated with the dependent variable. Thus, the robustness

test results (as presented in Table 5.31 above) are qualitatively similar to the main results presented in Table 5.30.

Thus, the results from this study indicate that certain variables from political economy, stakeholder, and legitimacy theories are able to explain the content-quality of environmental disclosures in annual reports, stand-alone reports and homepages of oil and gas companies in developing countries, whilst other variables are not. Specifically, the results of multivariate analysis indicate that some predictor's variables are significantly associated with the dependent variable with size of company and leverage being the most significant, followed by profitability, membership of industry's associations and foreign ownership. The remaining variables (type of company, close to market, ownership concentration, institutional ownership, state ownership, multi-nationality and environmental certification) were found to be insignificant.

The following sub-sections present the results of regression analysis, while these results are discussed in detail in the next chapter.

5.2.4.3.2.1.1 Company Size (H₂):

The result in Table 5.31 shows that there is a highly positive significant ($p = 0.000$) relationship between company size and content-quality of environmental disclosure. Therefore, this result supports the hypothesis 2 of this study which predicted that, there is a positive relationship between the content-quality of environmental disclosure and size of company. Therefore, H₂ is accepted.

5.2.4.3.2.1.2 Type of Company (H₃)

Hypothesis 3 predicts that there is a positive relationship between type of oil and gas company (individual/independent or project-based/joint-venture) and environmental disclosure content-quality of oil and gas companies in DCs. However, Table 5.31 shows that the t-value is -0.58 and p-value is 0.561 ($p > 0.05$). This suggests that, there is no relationship between type of company and the level of environmental disclosure content-quality of oil and gas companies in developing countries.

5.2.4.3.2.1.3 Close to Market (H₄)

In this study the hypothesis 4 predicts that the companies with greater proximity to the final consumer (have retail sales and/or have brands) are more likely to provide better environmental information. The result in Table 5.31 does not support this hypothesis, as the relationship between close to market and content-quality of environmental disclosure is not significant ($t = 0.19$, $p = 0.852$). Therefore H₄ is rejected.

5.2.4.3.2.1.4 Ownership Concentration (H₅)

Hypothesis 5 predicts that company with high concentrated ownership disclose less/lower quality environmental disclosure. This hypothesis was not supported by this study, as analysis (see Table 5.31) shows that relationship between ownership concentration and content-quality of environmental disclosure is statistically insignificant ($t = 0.13$, $p = 0.900$).

5.2.4.3.2.1.5 Foreign Ownership (H₆)

Hypothesis 6 proposes a positive content-quality environmental disclosure-foreign ownership percentage relationship. Based on the results listed in Table 5.31, it is

evident that although a relationship exists between the two constructs, such relationship is statistically weak ($t = 1.82$, $p = 0.071$). However, this result indicates that FOROWN associates with the dependent variable at the 0.10 level of significance.

5.2.4.3.2.1.6 Institutional Ownership (H_7)

Hypothesis 7 states that there is a positive relationship between institutional ownership and environmental disclosure content-quality of oil and gas companies in DCs. The result in Table 5.31 shows that the relationship between institutional ownership and content-quality of environmental disclosure is statistically not significant, as p-value is 0.634 (> 0.05). Thus, the hypothesis that predicted a relationship between institutional ownership and quality of environmental disclosure is rejected.

5.2.4.3.2.1.7 State Ownership (H_8)

Hypothesis 8 predicts a positive relationship between state ownership and environmental disclosure content-quality of oil and gas companies in DCs. However, the result in Table 5.31 shows that the relationship between state ownership and content-quality of environmental disclosure is statistically not significant ($t = -1.36$, $p = 0.175$). Therefore, no support is found for this hypothesis.

5.2.4.3.2.1.8 Profitability (H_9)

The result in Table 5.31 shows that there is a positive significant relationship between profitability and environmental disclosure content-quality, as t value is 2.07 and p-value is 0.041 ($p < 0.05$). This result supports the hypothesis 9 of this study

which states that, "there is a positive relationship between profitability and environmental disclosure content-quality of oil and gas companies in DCs". Therefore, this hypothesis is accepted.

5.2.4.3.2.1.9 Leverage (H₁₀)

Table 5.31 shows a strong positive relationship between leverage and quality of environmental disclosure ($t = 3.82, p = 0.000$). Thus, this finding supports the hypothesis ten which states that "there is a positive relationship between leverage and environmental disclosure quality of oil and gas companies in DCs". Therefore, this hypothesis is accepted.

5.2.4.3.2.1.10 Multi-nationality (H₁₁)

Table 5.31 shows insignificant relationship between multi-nationality and content-quality of environmental disclosure ($t = 1.62, p = 0.108$). Therefore, hypothesis 11, which predicts a positive relationship between multi-nationality and environmental disclosure content-quality of oil and gas companies in DCs, is rejected.

5.2.4.3.2.1.11 Environmental Certification (H₁₂)

Pertaining to environmental certification, the study found an insignificant relationship between environmental certification and the content-quality of environmental disclosure of oil and gas companies in developing countries ($t = 0.43, p = 0.669$). Therefore, hypothesis 12, which states that "there is a positive relationship between environmental certification and environmental disclosure content-quality of oil and gas companies in DCs" is rejected.

5.2.4.3.2.1.12 Membership of Industry's Associations (H₁₃)

Table 5.31 shows that, as for membership of industry's associations (H₁₃), the t-value is 2.25, and p-value is 0.027. Thus, as the p-value is under 0.05, therefore, hypothesis 13 is accepted, and it is concluded that there is a positive relationship between membership of an industry's associations and environmental disclosure content-quality of oil and gas companies in developing countries.

5.3 Summary

This chapter presented the results of the tests developed to investigate the hypotheses formulated for environmental disclosure content-quality. The result of ANOVA test reveals that the first hypothesis of this study which states that "there is a significant difference between several disclosure mediums with regard to their environmental disclosure content-quality in oil and gas industry in developing countries", was confirmed. Specifically, the findings of this study revealed that, the mean for environmental disclosure content-quality in stand-alone environmental reports was statistically significantly higher than in other media, followed by annual reports, and lastly, corporate homepages had the lowest level of the environmental disclosure content-quality. The results of multiple regression indicate that out of twelve hypothesized variables, only five variables, namely, company size, foreign ownership, profitability, leverage and membership of industry's associations explain the environmental disclosure content-quality in annual reports, stand-alone reports and corporate homepages. Table 5.32 summarizes the hypotheses tested and findings.

Table 5.32

Summary of the Results of Hypotheses Testing

| No. | Hypothesis | Result |
|-----------------|--|---------------|
| H ₁ | There is a significant difference between several disclosure mediums with regard to their environmental disclosure content-quality in oil and gas industry in developing countries. | Supported |
| H ₂ | There is a positive relationship between company size and environmental disclosure content-quality of oil and gas companies in DCs. | Supported |
| H ₃ | There is a positive relationship between type of oil and gas company (individual/independent or project-based/joint-venture) and environmental disclosure content-quality of oil and gas companies in DCs. | Not Supported |
| H ₄ | There is a positive relationship between closeness to market and environmental disclosure content-quality of oil and gas companies in DCs. | Not Supported |
| H ₅ | There is a negative relationship between degree of ownership concentration and environmental disclosure content-quality of oil and gas companies in DCs. | Not Supported |
| H ₆ | There is a positive relationship between foreign ownership and environmental disclosure content-quality of oil and gas companies in DCs. | Supported |
| H ₇ | There is a positive relationship between institutional ownership and environmental disclosure content-quality of oil and gas companies in DCs. | Not Supported |
| H ₈ | There is a positive relationship between state ownership and environmental disclosure content-quality of oil and gas companies in DCs. | Not Supported |
| H ₉ | There is a positive relationship between profitability and environmental disclosure content-quality of oil and gas companies in DCs. | Supported |
| H ₁₀ | There is a positive relationship between leverage and environmental disclosure quality of oil and gas companies in DCs. | Supported |
| H ₁₁ | There is a positive relationship between multi-nationality and environmental disclosure content-quality of oil and gas companies in DCs. | Not Supported |
| H ₁₂ | There is a positive relationship between environmental certification and environmental disclosure content-quality of oil and gas companies in DCs. | Not Supported |
| H ₁₃ | There is a positive relationship between membership of an industry /Trading associations and environmental disclosure content-quality of oil and gas companies in DCs. | Supported |

The next chapter will discuss the findings of the study in detail.

CHAPTER SIX

DISCUSSION

6.1 Introduction

This study attempted to determine the level of content-quality of environmental disclosure made by oil and gas companies in their annual reports, stand-alone reports and corporate homepages and whether the content-quality of such disclosure varies across different reporting mediums. Furthermore the influence of several expected factors (namely, company size, type of company, close to market, ownership concentration, foreign ownership, institutional ownership, state ownership, profitability, leverage, multi-nationality, environmental certification, and membership of industry's associations) on the content-quality of environmental disclosure were also analyzed. Political economy theory, stakeholder theory and legitimacy theory provide the foundations for this study to investigate factors influencing the quality of environmental disclosure amongst oil and gas companies in developing countries. However, results were presented in previous chapter, whereas this chapter discusses these results in detail.

6.2 Discussion of Results

Adopting political economy theory, legitimacy theory, and stakeholder theory, this study investigates the content-quality of environmental disclosure by oil and gas companies in developing countries, and possible predictors behind such disclosure. This study reveals a relatively high content-quality of environmental information disclosed in the annual reports, stand-alone environmental reports and on the corporate websites of these companies. On average, compared with annual reports

and corporate websites, oil and gas companies in developing countries communicate more and better content-quality environmental information in their stand-alone environmental reports. In addition, results based on the regression model indicated that only five variables (company size, foreign ownership, profitability, leverage and membership of an industry /trading associations) are significantly related to the quality of environmental disclosure, while other variables do not provide any explanation as to the level of the content-quality of such disclosure. The following sections present the discussion of the findings according to the research questions and objectives, underpinning theories, hypotheses and the finding of previous studies.

6.2.1 The Level of Environmental Disclosure Content-quality

The first objective of this study is to determine the level of environmental disclosure content-quality of oil and gas companies in developing countries. This objective represents the first research question i. e. “What is the level of environmental disclosure content-quality of oil and gas companies in the developing countries?”. To determine the level of environmental disclosure quality, content analysis has been conducted to extract disclosure content-quality from annual reports, stand-alone reports, and corporate homepages of sampled companies for the year 2010. For this purpose an environmental disclosure index which adapted from various previous related studies and scoring system of Wiseman (1982) were employed. However, overall content-quality of environmental disclosure of the sample companies, in addition, the content-quality of disclosure in each categories and each reported indicators were specifically analyzed.

The results of the descriptive statistics of the environmental disclosure content-quality showed that the range of overall environmental disclosure quality scores varies widely, from the minimum 33 to the maximum 106. It is also shown that the mean of content-quality of total environmental disclosure in the three reporting mediums is 68.98 scores, which represents (54.75%) against a possible maximum score of 126. This level of disclosure quality is similar to that found by Eljayash *et al.* (2012) who revealed that the average of quality of CED in annual reports by oil companies in the Arab oil countries was 26.66 (55.54%) in 2010.

However, the level of environmental disclosure content-quality indicated in the current study is relatively high compared to the majority of previous studies. For example, Hooks & Van Staden (2011) indicated that the overall mean for quality of environmental reporting was 31%. Ane (2012) indicated that the overall environmental information disclosure quality of heavily pollution industries listed firms in China is low (18.56% in 2007, 24.10% in 2008, and 27.43% in 2009). Eakpisankit (2012) indicated that the mean total CER quality score is 30.49% of the maximum possible. Oba and Fodio (2012a) revealed that the environmental disclosure quality of Nigerian oil and gas companies has a mean statistic at 5.15 out of 20 maximum scores (26%).

Haji (2013) revealed that the quality of CSR disclosure increased over time from 9.68 percent in 2006 to 14.68 percent in the year 2009. Ahmad and Haraf (2013) also indicated that the overall quality of environmental disclosures is very poor, as though the total maximum score for the disclosure index is 95, the highest score for the sample is only 19, while, majority of the companies having a disclosure score of only

between 1 and 5. Cuesta and Valor (2013) who revealed that the quality of environmental, social and governance reporting of Spanish listed companies is 37%. Harun *et al.* (2013) concluded that the quality of sustainability disclosure of the Malaysian commercial banks is low (about 23%).

The level of disclosure content-quality of this study is also higher than those found by Sulaiman *et al.* (2014) who indicated that the quality of environmental disclosure is low (24.80%). As well as the level of disclosure quality of this study is higher than those found by Comyns and Figge (2015) who indicated that the mean report quality scores over the period of their study (1998-2010) varied between 28% and 48%, Dong *et al.* (2015) who revealed that the average of CSR disclosure quality for the sample companies is 49% , and Michelon *et al.* (2015) who indicated that most of the information analyzed is qualitative while an average of only 11.9% and 4.2% are respectively quantitative and monetary.

However, this relatively high content-quality of environmental disclosure will help the stakeholders of companies in making decisions. It was recognized that for the users of information, increasing the disclosure quality reduces information asymmetry (Chakroun and Hussainey, 2014). It was argued that when disclosure quality is high, investors will be better informed about a company's activities (Katmun, 2012). Thus, it is recognized that quality of reporting has been contended to significantly influence the decision quality of stakeholders (Brink *et al.*, 1997) and effective reporting should hence facilitate stakeholders' informed decisions that are consistent with their interests (Barr, 2007). In particular context of CSR disclosure, it was noted that this type of information is utilized by different groups of stakeholders to assist their

decision making (O'Rourke, 2004). More specifically, it is recognized that different stakeholders need to use environmental information when they make their decision (Suttipun and Stanton, 2012; Villiers and Staden, 2011).

The reason behind this relatively high content-quality of environmental disclosure made by oil and gas companies in developing countries is the fact that firms affiliated with more environmentally sensitive industries provided more comprehensive social and environmental disclosure than firms affiliated with less environmentally sensitive industries (Bowrin, 2013), due to the environmentally sensitive sectors receive more public scrutiny (Aburaya, 2012; Kolk and Fortanier, 2013). Another explanation is that environmental disclosures of the oil companies increased significantly in response to the spill incident which occurred from oil platforms owned by BP in the Gulf of Mexico (Eljayash *et al.*, 2012; Summerhays and De Villiers, 2012), as the accident was an environmental crisis that not only impacted the BP image and legitimacy, but also impacted on the image and legitimacy of other oil companies (Summerhays and De Villiers, 2012). This increasing is consistent with prior research which pointed that the risks arising from specific environmental incidents affect the reporting practices of the particular company and of the other companies operating in the same industry (cf. Ahmad *et al.*, 2003; Islam and Islam, 2011; Patten, 1992, Suttipun and Stanton, 2012).

Moreover, given the environmentally-sensitive nature of the oil and gas industry and the increasing adverse media pressure and public concern with various environmental incidents related with this industry, it is expected to observe that the quality of environmental disclosure of oil and gas industry is higher than in other

industries. Also, the rationale behind this relatively high content-quality disclosure may be due to that the previous studies have restricted their analyzing to a single reporting medium, mostly annual report, while companies use different disclosure mediums to communicate their environmental information.

However, the level of environmental disclosure content-quality indicated in this study is lower compared to some previous studies such as Aburaya (2012) which indicated that the level of corporate environmental disclosure quality in the UK was 72.74%. This can be explained by that the level of environmental disclosure of companies in developing countries is low and lag behind that of companies in developed countries (He and Loftus (2014).

Analysis of the different categories revealed that the environmental disclosure content-quality of each of eight categories is different. This result is in line with some previous studies such as Hewaidy (2016) who evidenced that the disclosure level varies by disclosure category. However, analysis of the different categories showed that, the category “sustainable development” has the highest average mean of scores with 2.123, followed by “pollution abatement” (2), “health and safety” (1.86), “disturbances to land and land remediation” (1.657), “environmental management” (1.629), “economic factors” (1.404), “laws and regulations” (0.97), and lastly, the category “spills & environmental incidents” has the lowest average mean (0.80).

Regarding the category “economic factors”, this category exclusively covers monetary environmental expenditure disclosure, specifically, past and current

environmental capital expenditures, past and current environmental operating costs, future environmental capital expenditures, future environmental operating costs, and environmental liabilities and provisions. Among the eight disclosure categories, this category has the third least average mean. This category ranged from a minimum score of 0 to a maximum score of 15, with a mean of 7.02, average mean of 1.404, and a standard deviation of 4.230, indicating that there was a large variation in content-quality of economic related environmental disclosure among sample firms. This suggests that, while, some companies did not disclose any information about economic aspects of their environmental performance, other companies disclosed full information about these aspects. An important item within this category is “past and current environmental capital expenditures”. However, the low level of environmental disclosure content-quality of monetary environmental expenditure disclosure made by oil and gas companies in developing countries is similar to the findings of literature that very few companies in developing countries provide monetary environmental information (Ahmad Haraf, 2013).

The category “laws and regulations” comprises three items related to environmental legislations and regulations, litigation and legal proceedings, and fines and penalties (monetary and non-monetary) for noncompliance with environmental laws and regulations. Among the eight disclosure categories, this category has the second least average mean. This category ranged from a minimum score of 0 to a maximum score of 9, with a mean of 2.91, average mean of 0.97, and a standard deviation of 1.722, indicating that, while some companies did not disclose any information about laws and regulations, other companies disclosed full information about these matters. However, within this category, the highest score (about 2 scores) relates to

information on "environmental legislations and regulations requirements", followed by "fines and penalties" (0.53 score), and the lowest score is for "litigation" item (0.40 score).

For the category "pollution abatement" the results showed that this category ranged from a minimum score of 2 to a maximum score of 17, with a mean of 11.98, average mean of 2, and a standard deviation of 2.804, indicating that, all companies providing at least one item of pollution abatement in non-quantitative specific form, whereas some companies providing almost (17 out of a possible 18 scores) full information in monetary or quantitative terms. Within this category, "air emission information" has the highest score (2.71), while, the lowest score (0.48) relates to information on "noise, odours and visual quality". However, among the index categories, this category has the second highest average mean of scores (2).

With respect to the category "sustainable development" the results revealed that this category ranged from a minimum score of 0 to a maximum score of 12, with a mean of 8.49, average mean of 2.123, and a standard deviation of 2.472, indicating that, while some companies did not disclose any information about sustainable development issues, other companies provided full information in in monetary or quantitative form with a maximum possible score of 12). However, among the disclosure index, this category has the highest average mean of scores with 2.123. Within this category, the item "conservation of natural resources" has the highest mean score (2.78), while, the lowest mean score (1.57) relates to the item "recycling".

Regarding the category “disturbances to land and land remediation“ which comprises three items related to description and restoration of sites, impacts to land, and efforts of remediation, the results showed that this category ranged from a minimum score of 0 to a maximum score of 9, with a mean of 4.97, average mean of 1.657, and a standard deviation of 2.574, these mean that, while some companies did not disclose any information on these issues, others provided full information. Within this category the results showed that, disclosure item “efforts of remediation” has the highest mean of scores (1.72 score), followed by the item “disturbances to land” (1.71 score), then the item "sites“ (1.54 score).

As for the category “spills and environmental incidents”, it can be observed that among the eight disclosure categories, this category has the least rank based on average mean (0.80) as well as based on mean (2.40). This category ranged from a minimum score of 0 to a maximum score of 9, indicating that there was. This suggests that, while some companies disclosed full information about spills and environmental incidents, other companies did not disclose any information about these aspects. However, an important item within this category is “number and nature of spills”.

Regarding the category “environmental management“, this category is the most significant in the index as it comprises a total of ten items relating to environmental management system and other related issues, therefore, it carries a total possible score of 30 out of the maximum total score for the index of 126. This category ranged from a minimum score of 2 to a maximum score of 26, with a mean of 16.29, average mean of 1.629, and a standard deviation of 4.936, indicating that there was a large

variation in content-quality of environmental management related disclosure among sample firms. This suggests that, all companies providing at least one item of environmental management in non-quantitative specific form, and some companies providing 26 out of a possible 30 scores. Within this category, "environmental activities and programmes" has the highest mean score (2.16), followed by "goals and targets" with mean score of 2.11, while, the lowest score (1.03) relates to information on "environmental awards and recognition".

Finally, the category "health and safety" which comprises eight items related to health and safety aspects, such as health and safety incidents, health and safety laws, regulations, policies and systems, health and safety training, and health and safety auditing, has the third highest average mean (1.86). This category ranged from a minimum score of 6 to a maximum score of 21, with a mean of 14.88, and a standard deviation of 3.182, indicating that there was a large variation in content-quality of health and safety related disclosure among sample firms. This suggests that, all companies providing at least three times of health and safety in non-quantitative specific form, and some companies providing 21 out of a possible 24 scores. Within this category, item of "health and safety incidents and accidents" has the highest score (2.70), followed by "health and safety at work" with mean score of 2.13, while, the lowest mean scores relate to "toxic hazard" (1.11) and "health and safety auditing" (1.39). However, the high level of disclosure content-quality of this category is consistent with the fact that great attention given to safety and health issues in oil and gas industry, as the safety and health management is one of the vital constituents of oil and gas industry activities because most of the operational conditions, chemicals and end products associated with oil and gas production are

well-known to pose serious safety and health threats to the workers (Wipro Ltd., 2013).

Among all the environmental items studied, the descriptive analysis of the disclosure showed that the item “conservation of natural resources“ under the category “sustainable development“ represents the highest disclosure content-quality with mean of 2.78, followed by “air emission information” under the category “pollution abatement“ and “health and safety incidents and accidents“ under the category “health and safety“ with means of 2.71 and 2.70 respectively. On the other hand, “future environmental operating costs“ under the category “economic factors“ represents the lowest disclosure content-quality with mean of 0.28, the second lowest item is “costs of treatment of spills“ under the category “spills& environmental incidents“ with mean of 0.34, and the third lowest item is “litigation“ under the category “laws and regulations” with mean of 0.40.

However, from data review it was noted that for companies that scored low on the content-quality index did not disclose some items and/or did not disclose in monetary/quantitative terms, or did not address specific issues in their reporting. Despite there are numerous companies disclose all index items, but no one of these companies disclose full information in monetary or quantitative form. However, the maximum score obtained by the sample companies is 106 out of a possible 126, indicating significant scope for improvement even among the companies with the highest level of environmental disclosure. In addition, the results indicated variation in the disclosure content-quality among the sample companies. These results draw attention to the need to focus on the development of clear standards or guidelines for

the environmental reporting. As such standards and guidelines will motivate companies to improve their environmental disclosure.

6.2.2 The Content-quality of Environmental Disclosure in Different Media

The second research objective was to investigate whether there is any significant difference between different reporting mediums (namely, annual report, stand-alone reports, and corporate homepages) regarding their environmental disclosure content-quality of oil and gas companies in developing countries. This research objective represents the second research question, i.e. “Are there any differences between environmental disclosure in annual reports, stand-alone reports and corporate homepages of oil and gas companies in developing countries, in terms of content-quality?”

The results of the descriptive statistics indicated great variations in the content-quality of environmental disclosure both among and within different reporting mediums. Thus, the results of ANOVA test confirmed the variation in the content-quality of environmental disclosure among the three mediums is significant ($F(2,345) = 87.384, p = 0.000$). While, the results of the descriptive statistics showed that the content-quality of environmental disclosure in annual reports ranges from 13 to 96 scores with a mean of 52.63, in stand-alone reports ranges from 20 to 106 with a mean of 65.64, while it ranges from 13 to 75 scores with a mean of 38.53 in homepages.

It can be seen that stand-alone reports have the highest mean of scores of environmental disclosure content-quality (65.64) followed by annual reports (52.63),

while, the homepages have the lowest mean (38.53). Thus, the environmental disclosure content-quality in stand-alone environmental reports is statistically significantly higher than in other mediums, followed by annual reports, and lastly, corporate homepages had the lowest level of the environmental disclosure content-quality. These results indicate that, most of oil and gas companies in developing countries prefer stand-alone reports as medium of environmental disclosure followed by annual reports..The result also signifies that the full potential of the website to report and communicate environmental information is not effectively utilized.

Primarily, this finding is in line with some previous studies. For example, Zeghal and Ahmed (1990) indicated that in terms of the number of words, different disclosure media play different roles in the total social information disclosure, and Buhr (1994) who found difference between annual reports and environmental reports with regard to quantity, subject matters, type of information, and tense used. This finding also is consistent with Kuo and Chen (2013) who pointed that companies are more active in using stand-alone reports as an effective tool to establish their legitimacy image.

This finding also supports findings of some prior studies. For example, Buhr and Freedman (2001) who indicated that various companies generating environmental reports are moving much of their environmental disclosures out of the annual report and into the environmental report. Branco and Rodrigues (2008) found that environmental information is more disclosed in annual reports than on the internet. Vuorela (2014) pointed that on cases where companies have increasingly produced separate environmental reports, it can be possible to find very little environmental performance information in the annual report. The finding is also consistent with

findings from some previous studies which reveal that disclosure is taking place more in annual reports than on web sites (cf. Sobbani *et al.*, 2012). However, the relatively low level of disclosure quality on homepages consistent with Joseph *et al.* (2014) and Lodhia *et al.* (2012) in that the full potential of the website to report and communicate environmental and sustainability information is not effectively utilized.

On the contrary, this result is inconsistent with the result obtained by Tilt (2001b) who indicated that the annual report is still considered an appropriate medium for environmental disclosure, Cormier and Magnan (2004) who found no statistically significant difference between the different environmental disclosure mediums, Chatterjee and Mir (2006) who indicated that companies provide more environmental information on their websites than the information provided in their annual reports. The finding of this study is also inconsistent with that of Ramdhony *et al.* (2010), which revealed that the annual report is the most common medium used to disclose environmental information followed by stand-alone report and internet web pages, and Suttipun and Stanton (2012) who did not find different amount of environmental disclosures made in annual reports and on websites.

A possible explanation for this finding may be due to the fact that stand-alone environmental reports are very carefully designed, glossy and voluminous documents (Gray and Bebbington, 2001). Buhr and Freedman (2001) contended that, where firms generated stand-alone environmental reports, it is possible to find minimal information concerning environmental performance within their annual reports. Hassan (2010) argued that the presence of stand-alone reports could affect social disclosure in annual reports. He argued that "it is possible that companies that

produce corporate responsibility reports could decrease the quantity of social and environmental information in their annual reports based on the presence of this information in their stand-alone reports” (p. 81).

Another explanation is that reporting mediums other than annual reports (such as stand-alone reports) are increasingly used as a platform for companies to communicate about their environmental activities (Yusoff and Othman, 2013). Moreover, the result that the quality of disclosure is higher in stand-alone reports can be interpreted by the argument that, “while audited information is viewed more credibly, non-audited sections are likely to contain more environmental information. In the absence of mandatory requirements, and because disclosure in audited sections requires additional cost of ensuring compliance with the laws and regulations, companies would rather that their environmental disclosure be non-audited and they are willing to provide more environmental disclosures in those sections” (Mitchell, *et al.*, 2006).

These results indicated that the content-quality of stand-alone reports is higher compared to annual reports and corporate homepages. This indicates that majority of oil and gas companies in developing countries prefer stand-alone reports as media of environmental disclosure. These results reflect the importance of the stand-alone reports to information users. Thus, taking into account that reviewing all reporting mediums used by a company for its environmental information is difficult and time consuming for readers, these results imply that information users, specifically those concerned with environmental aspects can rely on stand-alone reports and annual reports, as they provide better content-quality disclosure.

6.2.3 Factors Influencing the Content-quality of Environmental Disclosure

The third research objective was to investigate and determine nature and extent of relationships between certain company characteristics (namely, company size, type of company, close to market), company ownership structure (namely ownership concentration, foreign ownership, institutional ownership, state ownership), economic performance of company (namely profitability, leverage), multi-nationality, environmental certification, membership of industry's associations and the level of environmental disclosure content-quality of oil and gas companies in the developing countries. This research objective represents the third research question, i.e. "What are the relationships, if any, between company characteristics (namely company size, type of company, close to market), company ownership structure (namely ownership concentration, foreign ownership, institutional ownership, state ownership), economic performance of company (namely profitability, leverage), multi-nationality, environmental certification, membership of industry's associations and corporate environmental disclosure content-quality of oil and gas companies in the developing countries?".

Multiple regression analysis using OLS with robust standard error was employed to test the research hypotheses of the study. Such multivariate analysis is carried out to investigate the relationship between the content-quality of environmental disclosure and each of the independent variables. The results indicated that R Squared of the multiple regression model is 0.854, and the adjusted R Squared is 0.837 indicating that 83.70% of the changes in the total content-quality of environmental disclosure is explained by the changes in the independent variables. This implies that the explanatory power of the model is significantly high.

et al., 1998).

The results showed that out of twelve hypothesized variables, only five variables were related to the content-quality of environmental disclosure. Specifically, company size, foreign ownership, profitability, leverage and membership of an industry /trading associations are positively and significantly related to the level of content-quality of environmental disclosure, while, type of company, close to market, ownership concentration, institutional ownership, state ownership, multi-nationality and environmental certification are not. Thus, some variables are able to explain the content-quality of environmental disclosures in annual reports, stand-alone reports and homepages of oil and gas companies in developing countries, whilst other variables are less influential. A possible explanation is that the companies do not show equal concerns for all stakeholders (Yin, 2012), as companies are more responsive to demands of some stakeholders than to others (Nue *et al.*, 1998).

The results revealed that the most significant variables that influence the content-quality of environmental disclosure are company size and leverage. This suggests that the role of society, shareholders and creditors in enhancing the content-quality of environmental disclosure in oil and gas companies of developing countries are vital. These results are consistent with previous studies on motivation of environmental disclosure. For example, Cormier *et al.* (2004) through a survey found that the key motivations for the environmental disclosure are the pressure or demand from the public and shareholders.

However, relationships are mostly in the expected direction, except for ownerships concentration where insignificant negative positive relationship is documented, and

type of company, institutional ownership and state ownership where negative relationships are documented. These results are discussed in detail as follows.

Consistent with the expectations developed from the literature review, the company's size (as measured by total assets) has a positive relationship with content-quality of environmental disclosure. Therefore, this result supports the hypothesis 2 of this study which predicted that, there is a positive relationship between the content-quality of environmental disclosure and size of company.

This finding adds to the relatively large volume of empirical evidence supporting the political economy, legitimacy and stakeholder theories. Thus, this result provides some support for legitimacy theory which suggests that corporations seek to ensure that their activities and performances are acceptable to society. Specifically, the legitimacy theory posits that large firms are highly visible and they highlight their corporate image and use social and environmental disclosure as a method to gain and sustain their social status and reputation (Adams *et al.*, 1998; Patten, 1992; Ying, 2006). This finding is also consistent with stakeholder theory perspectives that bigger firms require more disclosure to obtain capital from financial markets (Adams *et al.*, 1998; Patten, 1992). They are also highly visible to external groups, more susceptible to scrutiny from stakeholder groups, therefore, face more pressure to publish their social initiatives from stakeholders' groups (Alsaeed, 2006; Giannarakis, 2014). Larger firms also have larger and more diverse stakeholder groups who are looking out for information (Brammer & Pavelin, 2004; Cormier *et al.*, 2005; Roberts, 1992). This finding also supports arguments based on political theory that political costs of large companies are higher than those of smaller companies, so in attempting to

improve confidence and reduce political costs, larger companies are more likely to show higher levels of disclosure (Watts & Zimmerman, 1990).

This finding is in line with findings from previous empirical studies which revealed a positive relationship between the size of the company and the social and environmental disclosure (e.g. Abd Rahman *et al.*, 2011; Adams, 2002; Adams *et al.*, 1998; Alciatore and Dee, 2006; Bowrin, 2013; Brammer and Pavelin, 2006; Branco and Rodrigues, 2008; Cormier and Magnan, 1999; Das *et al.*, 2015; Deegan and Gordon, 1996; Deegan & Rankin, 1996; Dong *et al.*, 2015; Esa *et al.*, 2015; Gray *et al.*, 1995a; Gray *et al.*, 2001; Hackston and Milne, 1996; Haji, 2013; Hamid, 2004; Haniffa and Cooke, 2005; Hassan, 2010; Kansal *et al.*, 2014; Leary, 2003; Lu and Abeyssekera, 2014; Muttakin and Khan, 2014; Neu *et al.*, 1998; Oba and Fodio, 2012a; Pahuja, 2009; Patten, 1991; Purushothaman *et al.*, 2000; Reverte, 2009; Said *et al.*, 2009; Setyorini and Ishak, 2012; Suttipun and Stanton, 2011; Tagesson *et al.*, 2009; De Villiers & Barnard, 2000; Watts & Zimmerman, 1978; Ying, 2006; Zain, 1999; Zhang *et al.*, 2009).

This finding also consistent with findings of studies of Chithambo and Tauringana (2014) that indicated a positive significant association between company size and GHG disclosure, Choi *et al.* (2013) that, indicated a positive relationship between firm size and the extent of voluntary carbon reporting, Giannarakis (2014) which highlighted a significant positive relationship between company size and the level of social disclosure, He and Loftus (2014) which indicated that the firm size was found to be positively associated with the extent of environmental disclosure. Joseph *et al.* (2014) revealed that size is a significant predictor of the extent of sustainability

(2014) found no significant association between profitability and GHG disclosure, Darus *et al.* (2014) that revealed that there is no significant relationship between reporting on websites. Sulaiman *et al.* (2014) supported this finding, as they revealed a significant positive association between firm size and the quality of environmental disclosure. Nurhayati *et al.* (2015) also revealed that firm size is statistically significant factor in explaining the variation of social and environmental disclosure, Dibia and Onwuchekwa (2015) revealed that there is a significant and positive relationship between firm size and corporate environmental disclosure in oil and gas companies of Nigeria, and Nurhayati *et al.* (2016) revealed that corporate size is a significant factor determining the extent of social and environmental reporting.

However, this result is inconsistent with findings of some previous studies, for example, Bayoud *et al.* (2012) which revealed that level of CSRD does not seem to be affected by company size in Libyan companies, Chithambo and Tauringana (2014) found no significant association between profitability and GHG disclosure, Darus *et al.* (2014) that revealed that there is no significant relationship between extent of CSR reporting and corporate size, and Soheilyfar *et al.* (2014) that found no relationship between firm size and disclosure quality.

The result of a positive and significant relationship between company size and the content-quality of environmental disclosure can be explained by the fact that larger companies are more visible to the society, and are more diversified across geographical and product markets and having larger and more diverse stakeholder groups. Therefore, they tend to provide high content-quality environmental disclosure to legitimize their businesses to the society and other stakeholder groups (Setyorini and Ishak, 2012). It was argued that being a large company implies that it is more visible and subject to intense public scrutiny which then might force it to

make more disclosures as a way of deflating criticism, as well as, large companies are resources rich which may enable managers to exercise more flexibility in their disclosure decisions (Chithambo and Tauringana, 2014; Rupley et al., 2012). It was also pointed out that large companies are more visible to investors, dispose more financial resources on social initiatives, such as environmental disclosure absorb extra costs for environmental disclosure, face more pressure to publish their social initiatives from stakeholders' groups, therefore, attend the maintenance of their good corporate image (Alsaeed, 2006; Giannarakis, 2014).

With respect to type of company, based on the argument that, for the project-based (consortia) company, there is often no one corporate name attached, at least in the minds of the public, therefore, pressure for reporting is non-existent (Sustainability & UNEP, 1999), it was predicted that independent companies provide better content-quality environmental disclosure than project-based/ consortia companies. Contrary to this expectation, type of company (independent or project-based/ consortia companies) found to have insignificant relationship to total environmental disclosure content-quality. This result is not consistent with legitimacy theory prediction that companies that being more visible are facing more social pressure, therefore they are more likely to provide a greater quantity of social responsibility information, in order to enhance their reputation. This result could be attributed to the attributes of origin countries of the independent companies or corporate characteristics of companies that comprise the joint-venture companies (projects) as well as their origin countries' attributes.

This finding is not consistent with legitimacy theory prediction that firms that are close to market are more visible to the community, therefore, they use social and environmental information to enhance their legitimacy (Branco and Rodrigues, 2008; Khlif *et al.*, 2015). The result also is inconsistent with stakeholder perspectives, which asserts that, companies that have finished products (retail sales) are more visible to the final consumers; therefore, the companies face additional pressure from consumers groups (as a secondary stakeholder) and, consequently, will be more inclined to provide environmental information (Benito and Benito, 2006).

It should be noted that the sample size for project-based/joint venture companies is about 5% among the entire samples. This may be too small to sustain appropriate statistical testing and explore the variation between independent/ individual and project-based/joint venture companies regarding their environmental disclosure content-quality. However, this is the first study that investigates impact of type of company (independent or project-based/ joint venture) on the disclosure, so, further research will give clear evidence whether there is a relationship between the two variables or not.

Regarding close to market, the results of this study revealed that companies offering branded goods or supplying the consumer market directly do not provide significantly higher content-quality environmental disclosure than their counterparts. This finding is not consistent with legitimacy theory prediction that firms that are close to market are more visible to the community, therefore, they use social and environmental information to enhance their legitimacy (Branco and Rodrigues, 2008; Khlif *et al.*, 2015). The result also is inconsistent with stakeholder perspectives, which asserts that, companies that have finished products (retail sales) are more visible to the final consumers; therefore, the companies face additional pressure from consumers groups (as a secondary stakeholder) and, consequently, will be more inclined to provide environmental information (Benito and Benito, 2006).

This result contrasts with the results reported by Stanwick and Stanwick (1999) who revealed that consumer products firms had the highest level of average disclosures pertaining to environmental aspects, Jablonowski (2002) who concluded that companies with brand names are more likely to provide environmental information

on health, safety and environment, and Benito and Benito (2006) that firms that are nearer to the final consumer are more inclined to provide information concerning environmental performance.

This insignificant relationship between close to market and environmental disclosure content-quality is also inconsistent with Haddock (2005), Haddock-Fraser and Fraser (2008) who revealed that brand-name and consumer-focused companies are more likely to disclose environmental information compared to their counterparts. The result of this study also contrasts with Darus *et al.* (2014) who revealed a significant and positive relationship between CSR reporting and customer, Nurhayati *et al.* (2015) who, revealed that international brand is statistically significant factor in explaining the variation of social and environmental disclosure, and Nurhayati *et al.* (2016) who revealed that brand development is a significant factor determining the extent of social and environmental reporting. This finding implies that the role of consumer in shaping corporate disclosure decisions is not effective.

As for ownership concentration, the analysis of this study showed that relationship between ownership concentration and content-quality of environmental disclosure is statistically insignificant. The expected relationship between ownership concentration and the content-quality of environmental disclosure might not be evident as a measure of overall ownership may not capture the unique individual interests, and hence the influence, of each particular shareholders group (Aburaya, 2012).

level of ownership is not associated with the extent of social and environmental disclosure.

However, this result is consistent with some previous studies and contrasts with others. For example, Craswell and Taylor (1992) did not find significant relation between ownership structure and disclosure of oil and gas reserves. Halme and Huse (1997) also found no significant relationship between environmental disclosure and ownership concentration. Tantish (2003) showed that ownership concentration and level of social and environmental disclosure are weakly related. Said *et al.* (2009) found no relationship between ownership concentrations and the extent of corporate social disclosure. Haji (2013) revealed that ownership concentration is insignificant in determining the quality of CSR disclosures. Sulaiman *et al.* (2014) revealed that the quality of environmental disclosure is not related to ownership distribution. Esa *et al.* (2015) revealed that the association between the level of CSR disclosure and ownership concentration is not significant. Nurhayati *et al.* (2016) revealed that the level of ownership is not associated with the extent of social and environmental disclosure.

On the other hand this finding is inconsistent with findings of some previous studies. For example, Cormier and Magnan (1999) concluded that there is a negative association between concentrated ownership and environmental disclosure. Cormier and Magnan (2004) revealed that concentrated ownership is a determinant of environmental disclosure in print disclosure and website disclosure mediums. Hassan (2010) found that the ownership diffusion is associated with the quantity and quality of corporate social disclosure. Darus *et al.* (2014) revealed a significant and negative relationship between CSR reporting and concentrated shareholdings. This finding also inconsistent with finding of Soheilyfar *et al.* (2014) that indicated a positive and significant relationship between ownership concentration and disclosure quality.

regulators of origin countries of its foreign investors.

In respect of foreign ownership, based on the regression analysis, it is evident that foreign ownership percentage is positively related to the content-quality of environmental disclosure at the 0.10 level of significance ($t = 1.82, p = 0.071$). This implies that the higher proportion of foreign ownership a company has, the higher will be the environmental disclosure content-quality.

From political economy perspective, it is well recognized that every country has unique norms and customs that are pursued by its citizens and that every country has different laws, rules and regulations governing trade and business affairs (Malone *et al.*, 1993), and each country may have different environmental institutional settings (Kolk and Fortanier, 2013). So, a company that has significant proportion of foreign investment has to consider the different norms and customs, laws, rules and regulations of origin countries of its foreign investors.

This result is aligned with the predictions of stakeholder theory which suggests that “an organization will respond to the concerns and expectations of powerful stakeholders and some of the response will be in the form of disclosure“ (Dibia and Onwuchekwa, 2015, p. 147). The result also supports legitimacy theory which predicts that companies facing greater exposure to public pressure in regard to environmental concerns will provide more environmental disclosure (Clarkson *et al.*, 2008; Michael *et al.*, 2015). This result came in line with arguments of some previous studies. For instance; it is argued that companies with foreign shareholders may disclose more information in order to enhance their ability to compete in the global capital market (Cormier *et al.*, 2005), it is also argued that a company with significant proportion of foreign ownership is subjected to greater exposure, and the

exposure to high foreign institutional pressures increases the risk of legitimacy crises (Kolk and Fortanier, 2013), in the same line it was argued that companies with foreign promoter holding may also have to comply with reporting requirements from several regulators which may improve their disclosure practices (Raithatha and Bapat, 2014).

The result also is consistent with some previous studies that supported the foreign ownership-environmental/social responsibility disclosure relationship (cf. Chapple and Moon, 2005; Cormier *et al.*, 2005; Darus *et al.*, 2013; Haniffa and Cooke, 2005; Peiyuan, 2005; Soliman *et al.*, 2012). Moreover, this finding is consistent with many previous studies that considered general disclosure context and revealed an association between foreign ownership and disclosure (cf. Barako, 2007; Haniffa and Cooke, 2002; Huafang and Jianguo, 2007; Raithatha and Bapat, 2014). Contrary, this finding inconsistent with Said *et al.* (2009) who found no association between the proportion of shares held by foreign ownership and the extent of corporate social disclosure, He and Loftus (2014) that indicated there is no association between foreign ownership and the extent of environmental disclosure, and Esa *et al.* (2015), which revealed that the association between the level of CSR disclosure and foreign ownership is not significant.

Regarding institutional ownership, the result showed that the relationship between institutional ownership and the content-quality of environmental disclosure is statistically not significant, as p-value is 0.634 (> 0.05). Thus, the hypothesis that predicted a relationship between institutional ownership and the content-quality of environmental disclosure is rejected. This finding implies that the role of institutional

shareholders in influencing decisions relating to environmental disclosure may not be evident.

A possible reason for non-existence of relationship between the content-quality of environmental disclosure and institutional ownership may be due to the substantial representation of institutional investors in oil and gas companies. Institutional shareholders are considered as the main stakeholder group which have access to the information they need (Aburaya, 2012; Cormier *et al.*, 2005) and, therefore, can obtain the required information from sources other than public disclosure media (Aburaya, 2012; Berthelot *et al.*, 2003).

However, this result contrasts with the studies by Healy *et al.* (1999), and Bushee and Noe (2000) who showed a positive disclosure quality-institutional ownership relationship, and Soliman *et al.* (2012) who indicated a significant positive relationship between CSR disclosure and institutional ownership. This finding also contrasts with Lapointe *et al.* (2005) and Htay *et al.* (2013) who indicated that highly firms characterized with a great percentage of institutional ownership are less inclined to disclose information.

On the other hand, this result is consistent with some previous studies. For example, Ginglinger and L'Her (2002) and Ali *et al.* (2007) revealed no association between institutional ownership and quality of environmental disclosure. Aburaya (2012) found no relationship between institutional ownership and total environmental disclosure quality. Rupley *et al.* (2012) also found no evidence of a relation between long-horizon institutional shareholdings and VED quality. While, in financial

disclosure context, Raithatha and Bapat (2014) found no association between institutional investors' shareholding and disclosures.

Interestingly, state ownership was found to have negative sign but not significant ($t = -1.36$, $p = 0.175$). Therefore, no support is found for hypothesis 8, which predicts a positive relationship between state ownership and environmental disclosure content-quality of oil and gas companies in DCs. This highlights the lack of relationship between state ownership and content-quality of environmental disclosure (H8).

A possible explanation for this finding may be that state owned companies face fewer pressures for voluntary disclosures. There are many reasons that weaken the pressures for voluntary disclosures by state-owned firms. First, shares that are owned by the state are not publicly tradable and the government or the state holders may concentrate on distributing wealth and sustaining the order in society (Xu and Wang, 1999) – in other words, enhancing shareholder value may not be the state-owned firm's main objective (Huafang and Jianguo, 2007). Second, the government is the sole or the majority shareholder in a state-owned firm and it is able to seek information from different sources and to gain access to financing compared to its non-state counterparts (Eng and Mak, 2003). Third, the social and environmental reports of such firms are often not as scrutinized by civil society groups than non-state owned firms (Frynas, 2009). In addition, state-owned companies are less dependent on the capital market to finance their projects and may have less motivation to provide information to improve their image, while, companies with lower levels of government ownership are more likely to be incentivized to disclose

greater environmental information to build a good relationship with the capital market as well as with the government (He and Loftus, 2014).

This result is inconsistent with the perspective of legitimacy theory and arguments that based on the legitimacy theory. For example, it is assumed that disclosure is used as a legitimization strategy in government institutions. In this regard, it is argued that government-owned companies face more pressure from society than the non-government-owned companies. Thus, government owned companies may use the disclosure as part of their legitimization strategy (Adnan, 2012). Amran and Devi (2008) argued that, the amount of shares owned by government bodies in firms will give them the power to intervene and generate pressure for such firms to disclose additional information in order to satisfy public expectation. As well as, Frynas (2009) stated that "stakeholder theory can explain many of the social and environmental strategies of state-owned companies".

This finding also is in contrast to some previous empirical studies such as Li, (2006), Amran and Devi (2008), Peng (2009), Said *et al.* (2009), Song and Zu, (2009) and Tagesson *et al.* (2009) who found positive association between state ownership and the extent of social and environmental disclosure. This result also inconsistent with findings of Chang (2013) who confirmed that firms with higher state ownership tend to provide more environmental information compared to firms with higher non-state ownership, and Naser and Hassan (2013) who evidenced that corporate social responsibility is positively and significantly associated with the percentage of shares owned by the government.

However, the finding of this study is in line with other studies that found no relation between state ownership and the social and environmental disclosure (cf. Darus *et al.*, 2014; Esa *et al.*, 2015; He and Loftus, 2014). This finding also is partially consistent with Haji (2013) who evidenced that government ownership did have a significant and positive relationship with the quality of corporate social disclosure in the year 2006, but this relationship has not been evidenced in the year 2009.

The multiple regression analysis revealed a significant positive association between company profitability and environmental disclosure content-quality. This result supports the hypothesis 9 of this study which states that, "there is a positive relationship between profitability and environmental disclosure content-quality of oil and gas companies in DCs". The result indicating that more profitable companies are concerned about providing high disclosure content-quality.

This positive relationship between profitability and the content-quality of environmental disclosure provide evidence that availability of financial resources enable firms to engage in some environmental initiatives and to invest in equipment and systems that will enable them to collect measure and report environmental information (Ratnatunga and Balachandran, 2009). This result also is supported by the argument of that the managers of profitable companies are freer to incorporate a social approach integrating disclosure initiatives to show their contribution to society and to promote a positive impression of its performance (Giannarakis, 2014).

The stakeholder theory perspective supports this finding in that it posits that firms with higher return on assets are more likely to possess a higher inclination to provide

environmental information as they are able to appropriate expenses on environmental abatement, and in turn, to report social and environmental information. The same holds true for the legitimacy theory, which posits that profitability provides firms with the autonomy and the flexibility to carry out and report social responsibility activities to stakeholders in the hopes of legitimizing their presence (Haniffa and Cooke, 2005).

This finding is consistent with the previous studies those reported a positive relationship between profitability and social and environmental disclosure (e.g. Esa *et al.*, 2015; Frost, 2000; Gray *et al.*, 2001; Haniffa and Cooke, 2005; Kansal *et al.*, 2014; Lu and Abeysekera, 2014; Muttakin and Khan, 2014; Nurhayati *et al.*, 2015; Pahuja, 2009; Roberts, 1992; Roitto, 2013; Said *et al.*, 2009; Setyorini and Ishak, 2012; Tagesson *et al.*, 2009; Yin, 2012; and Zhang *et al.*, 2009).

On the other hand, the finding is contrary to studies of Brammer and Pavelin (2008), Patten (1991), Hackston and Milne (1996), Purushothaman *et al.* (2000) that highlighted the absence of a significant association between profitability and social and environmental reporting, Reverte (2009) who concluded that profitability is not associated with corporate social responsibility disclosure. The finding of this study also is inconsistent with Abd Rahman *et al.* (2011) which revealed that profitability is insignificant in explaining the total CSR disclosure, Aburaya (2012) who revealed insignificant relationship between total environmental disclosure quality and profitability, Choi *et al.* (2013) who found no relationship between the profitability and the extent of voluntary carbon reporting, He and Loftus (2014) who indicated that there is no association between firm profitability and the extent of

environmental disclosure, Bowrin (2013) who concluded that profitability is not associated with corporate social responsibility disclosure, and Haji (2013) who found no relationship between the profitability and the quality of CSR disclosures.

The finding is also contrary to recent studies of Giannarakis (2014) which highlighted non significant association between firm profitability and the level of CSR disclosure, Sulaiman *et al.* (2014) which indicated that profitability had no significant relationship with the quality of environmental reporting, Dong *et al.* (2015) that revealed insignificant relationship between firm profitability and CSR disclosure quality, and Dibia and Onwuchekwa (2015) which revealed that there is no relationship between profitability and corporate environmental disclosure in oil and gas companies of Nigeria. As well as, the positive relationship between profitability and the quality of environmental disclosure is inconsistent with Das *et al.* (2015) where the relationship between the two variables was found to be negative.

There is also a strong positive relationship between leverage and content-quality of environmental disclosure ($t = 3.82, p = 0.000$). Thus, this finding supports the hypothesis ten which states that "there is a positive relationship between leverage and environmental disclosure content-quality of oil and gas companies in DCs".

The positive and significant relation in respect of leverage means that highly leveraged companies are likely to disclose more with quality information on environmental issues. Sulaiman *et al.* (2014) supported this view, arguing that "companies with higher leverage are generally more risky due to having a large portion of their capital as fixed interest bearing capital. Their continued existence is

This is aligned with findings reported by Alciatore and Dee (2006), which evidenced highly dependent on long term debt holders. Given this, to mitigate their risk, it is important for them to provide evidence to the public that they are environmentally responsible”, therefore, such companies may use environmental disclosure in order to portray the image of being environmentally responsible.

This finding is consistent with stakeholder’s theory perspective that, as a leverage ratio increases, the power of creditors (as a stakeholder group) also increases (Roberts, 1992), therefore, the demand for information by creditors will increase (Craswell & Taylor, 1992). The same holds true for legitimacy theory perspective, which posits that companies with higher leverage ratio have a higher environmental disclosure level because they have a greater need to legitimize their operations and existence to lenders and regulatory authorities.

This is aligned with findings reported by Alciatore and Dee (2006), which evidenced a significant positive relationship between environmental disclosure and leverage, Li (2006) who demonstrated a positive relationship between leverage and social disclosure and environmental disclosure. Along a similar note, Adams (2002) showed a relationship between social, ethical and environmental reporting and debt/equity ratio, Chithambo and Tauringana (2014) indicated that company gearing is significantly associated with GHG disclosure, Choi *et al.* (2013) revealed a positive relationship between leverage and the extent of voluntary carbon reporting, Chang (2013) revealed that financial leverage has a significantly positive impact on environmental disclosure, Jones, Frost, Loftus & Van Der Laan (2007) evidenced that firms having greater leverage are more inclined to report sustainability

performance, and Sulaiman *et al.* (2014) revealed a significant positive association between leverage and the quality of environmental disclosure.

However, this finding contrasts with Haniffa and Cooke (2005) which found no relationship between gearing and CSR, Brammer and Pavelin (2006) revealed that both level and quality of environmental disclosure are positively related with less leveraged companies, Reverte (2009) who concluded that leverage is not associated with corporate social responsibility disclosure, Abd Rahman *et al.*'s (2011) study which revealed that firm leverage is insignificant in explaining the total CSR disclosure, Ying's (2006) study that indicated a negative relationship between debt-equity ratio and extent of environmental disclosure, Esa *et al.* (2015) who revealed that the association between the level of CSR disclosure and leverage is not significant, Muttakin and Khan (2014) which found that extent of CSR disclosure has negative relationship with company leverage, and with Pahuja (2009) which indicated no significant relationship between the debt-equity ratio and the extent of environmental disclosure. As well as findings of the current study are in contrast with Roitto (2013) that revealed no significant relationship between CSR disclosure ratings and the leverage ratio.

The finding also contrasts with some other previous studies such as Dong *et al.* (2015) that revealed insignificant relationship between firm leverage and CSR disclosure quality, Giannarakis (2014) which highlighted non significant association between firm leverage and the level of CSR disclosure, He and Loftus (2014) who indicated that there is no association between financial leverage and the extent of environmental disclosure, Setyorini and Ishak (2012) revealed no association

between financial leverage and corporate social and environmental disclosure level, Haji (2013) who found no relationship between the leverage and the quality of CSR disclosures, Soheilyfar *et al.* (2014) that found no relationship between firm leverage and disclosure quality, and Dibia and Onwuchekwa (2015) revealed that there is no relationship between leverage and corporate environmental disclosure in oil and gas companies of Nigeria.

Concerning the multi-nationality, multiple regression analysis showed that multi-nationality has insignificant relationship with total environmental disclosure content-quality, indicating that multi-national companies are not concerned about providing high environmental disclosure content-quality, which in turn reflecting that international experience has no impact on the content-quality of environmental disclosure. This result is not consistent with the proposed positive relationship between the two variables. This may be due to the probability that the foreign operations (or parent companies) more often exist in developing countries which pay little attention to the social responsibility of a company (Hassan, 2010).

However, it was argued that foreign impacts are not always in favor of social investments. Even western (U.S. and European) companies have often been involved in antisocial behaviors (Yoshikawa *et al.*, 2010, as cited in Soliman *et al.*, 2012). Hence, the influence of foreign operations or parent companies on CED depends on the foreign countries' and/or parent companies' profiles and attributes. Thus, attention should go to the attributes of foreign countries in which multinational companies operate, rather than considering merely existence of foreign operations.

the levels of disclosure. The finding also goes against results of Chapple and Moon (2005) that highlighted a significant relationship between international exposure with

This finding is not consistent with stakeholder's theory perspective that a company which has considerable operations abroad is exposed to a broader spectrum of stakeholder influences and to the scrutiny of international community (Branco & Rodrigues, 2008). The finding also inconsistent with legitimacy's theory perspective that a multinational firm faces stronger and more diverse attacks on its legitimacy, forcing it to adopt more stringent environmental strategies and to disclose more information in order to manage and maintain legitimacy, show its stakeholders that it is a good company and prevent reputation damage (Kolk and Fortanier, 2013; Lopes & Rodrigues, 2007).

Such finding goes against those reported by prior studies such as Ahmed and Nicholls (1994) who revealed that the influence of MNC is significant in explaining the levels of disclosure. The finding also goes against results of Chapple and Moon (2005) that highlighted a significant relationship between international exposure with regards to international sales and CSR reporting. The result of the current study also is inconsistent with the study by KPMG (2005) on Asia region which found that companies that disclose CSR information are typically subsidiaries of multinational companies, and Peiyuan (2005) who stated that foreign-ventured firms have deeper understanding of environmental issues and are thus more inclined to disclose environmental information.

As well as, this finding contrasts with Bowrin (2013) that indicated a positive relationship between forging affiliation and SED extent, and Kolk and Fortanier (2013) who indicated that there is a positive relationship between environmental

disclosure and the degree of internationalization for firms in high-sensitivity sectors from high-standard countries.

With respect to environmental certification, the study found an insignificant relationship between environmental certification and the content-quality of environmental disclosure of oil and gas companies in developing countries. However, this finding is consistent with some previous studies, such as, Branco and Rodrigues (2008) who showed no significant relation between international experience and CSR, Hossain *et al.* (2006) who found no significant relation between extent of social and environmental disclosure and subsidiary of multinational companies, Pahuja (2009) found that the extent of environmental disclosure is not significantly affected by foreign association and exports to sales ratio, Hassan (2010) who revealed that degree of multinational activities is not associated with quantity and quality of corporate social disclosure, Sen *et al.* (2011) who identified that there is no significant difference in volume of disclosure between multinational companies and local Indian companies, and Hassan (2014) who indicated that the degree of multi-national activities appears not to be related to the level of CSD.

With respect to environmental certification, the study found an insignificant relationship between environmental certification and the content-quality of environmental disclosure of oil and gas companies in developing countries. The finding that the environmental certification is not a predictor for the content-quality of environmental disclosure could be explained by that, in order to assess a firm's environmental management system the ISO 14001 auditor and/or ISO 14001 registrar, typically have access to records and systems and obtain the information they need. So, the environmental certification issuers are not expected to be

responsive to public disclosure since they have alternative sources for information other than public disclosure.

This finding is in contrast with stakeholder theory prediction which suggests a positive relationship between environmental certification and environmental disclosure. Stakeholder theory admits that “an organization will respond to the concerns and expectations of powerful stakeholders and some of the response will be in the form of disclosure” (Dibia and Onwuchekwa, 2015, p. 147). Corporations disclose information on environmental performance in response to demands of their stakeholders (Alias, 2001; Tilt, 1994). Environmental certificates and standards issuers are recognized as stakeholder group that exerts environmental pressure on firms (Peiyuan, 2005).

This finding also is in contrast with several studies that show support for a positive relationship between environmental certification and environmental disclosure. For example, Patten and Crampton (2004) concluded that companies' who have ISO 14001 certification provide greater environmental disclosure, and Yusoff and Lehman (2004) indicated a significant relationship between ISO certification and total environmental disclosure. This result also contrasts with Yusoff and Othman (2013) who revealed that environmental disclosure practice both Malaysia and Australia is influenced by the accreditation of ISO certification, and Nurhayati *et al.* (2015) who revealed that international certification obtained (such as ISO 14001) is statistically significant factor in explaining the variation of social and environmental disclosure. However, the finding of this study is consistent with Eljido-Ten (2004) who did not provide restrictive evidence on this relationship, as the study indicated

that ISO 14001 certification seemed significant in the univariate outcome, but not in the multivariate one.

The findings of this study indicated that environmental certification is not a predictor for the content-quality of environmental disclosure. This leads to the suggestion that the ISO need to not only outline guidelines for good environmental performance but also for environmental reporting.

With regard to industry /trading associations, the multiple regression analysis showed that relationship between membership of an industry /trading associations and content-quality of environmental disclosure is statistically significant ($t = 2.25$, $p = 0.027$). This result suggests that companies those are being members of industry associations are likely to disclose better content-quality environmental information. This may be explained by that companies respond to the concerns and expectations of industry associations (as secondary stakeholders) and some of the response is in the form of disclosure (Dibia and Onwuchekwa, 2015). This result can be attributed to that the associations impede their members companies to disclose more and better environmental information. Accordingly, having a membership of the industry association may serve as a positive influencing factor.

This result could be seen in light of stakeholder theory in that companies could be motivated to disclose more and better content-quality information on environmental aspects to meet needs and demands of industry associations as stakeholder (Gray *et al.*, 1995a; Yusoff *et al.*, 2006; Yusoff and Othman, 2013). This finding also is consistent with legitimacy theory's prediction that companies who are members of

From this study indicate that certain variables from political economy, stakeholder, and legitimacy theories are able to explain the content-quality of environmental industrial associations are more likely to face media exposure, and hence are more likely to lose legitimacy that threatens their survivals to a significant extent (Deegan, 2002). It is also consistent with the theory's prediction that companies implement and disclose social responsibility activities to stakeholders (including industry associations) to legitimize their existence (Haniffa & Cooke, 2005). This finding is also in line with the argument of Burritt (1997) that industry associations introduce self-regulating codes of environmental practice and encourage monitoring and reporting of environmental performance.

To conclude, this study provides a reasonable level of support for the political economy theory, legitimacy theory, and stakeholder theory tenets in explaining content-quality of ED by oil and gas companies in developing countries. The results from this study indicate that certain variables from political economy, stakeholder, and legitimacy theories are able to explain the content-quality of environmental disclosures in annual reports, stand-alone reports and homepages of oil and gas companies in developing countries, whilst other variables are not. In particular, the results indicated that size of company, foreign ownership, profitability, leverage, and membership of industry's associations are significantly related with the dependent variable. The remaining variables (type of company, close to market, ownership concentration, institutional ownership, state ownership, multi-nationality and environmental certification) were found to be insignificant. This may considered as a signal for the companies to give more attentions for some stakeholders such as society, foreign shareholders, creditors and industry associations, more than other stakeholders.

Overall, the results of multiple regression analysis suggest that environmental disclosure content-quality is multidimensional and is driven by complementary forces. However, among the variables those influence the environmental disclosure content-quality, size of company and leverage being the most significant. This suggests that companies are more responsive to demands of some stakeholder's groups than to others (Nue *et al.*, 1998). Hence, to improve the content-quality of environmental disclosure, different stakeholders should play complementary roles. Different stakeholders may join together to form a strong group to promote environmental disclosure through increased demands and pressure on the companies.

6.3 Summary

This chapter presented the discussion of the findings based on the research objectives, underpinning theory, hypotheses and the findings of previous studies. Several conclusions were presented based on the findings and discussions. The study found that the quality of environmental disclosure of sample companies is relatively high compared to those reported by earlier studies in developing countries. The results confirmed also the variation in the content-quality of environmental disclosure among the three mediums is significant. Thus, the environmental disclosure content-quality in stand-alone environmental reports is statistically significantly higher than in other mediums, followed by annual reports, and lastly, corporate homepages had the lowest level of the environmental disclosure content-quality. This could suggest that companies prefer stand-alone reports as media of environmental disclosure. The result also signifies that the full potential of the website to report and communicate environmental information is not effectively

utilized. This result is in line with results of some previous studies and inconsistent with others.

This chapter also provides in depth discussions of results regarding relationships between the dependent variable (content-quality of environmental disclosure) and all the explanatory variables examined in this study. In this regard, this chapter discussed the results of the study based on underpinning theories and the findings of previous studies. Similarities and differences between results of the results of this study and results of previous studies were highlighted. The next chapter will present summaries of chapters, the findings, implications and limitations of the study, as well as suggestions for future research.



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CHAPTER SEVEN

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

7.1 Introduction

In this chapter, the entire thesis is reviewed. Thus, research questions, research objectives, research methodology and statistical analysis are presented in this chapter. Then, the research findings and conclusions are drawn. Implications of the results of the study are highlighted and the limitations of this study are identified followed by suggestions and recommendations for future research.

7.2 Overview of the Study

The objectives of this study are to determine the level of environmental disclosure content-quality of oil and gas companies in the developing countries; to investigate whether there is any significant difference between different reporting mediums (namely, annual report, stand-alone reports, and corporate homepages) regarding their environmental disclosure content-quality of oil and gas companies in developing countries; and to determine the nature and extent of relationships between certain company characteristics (namely, company size, type of company, close to market), company ownership structure (namely ownership concentration, foreign ownership, institutional ownership, state ownership), economic performance of company (namely profitability, leverage), multi-nationality, environmental certification, membership of industry's associations and the level of environmental disclosure content-quality of oil and gas companies in developing countries.

To answer these questions, this study adopted a quantitative research methodology.

In order to achieve the objectives of this study, three questions were constructed and then this study attempted to answer them. The questions are; what is the level of environmental disclosure content-quality of oil and gas companies in the developing countries?; are there any differences between environmental disclosure in annual reports, stand-alone reports and corporate homepages of oil and gas companies in developing countries, in terms of content-quality?; and, what are the relationships, if any, between company characteristics (namely company size, type of company, close to market), company ownership structure (namely ownership concentration, foreign ownership, institutional ownership, state ownership), economic performance of company (namely profitability, leverage), multi-nationality, environmental certification, membership of industry's associations and environmental disclosure content-quality of oil and gas companies in developing countries?

To answer these questions, this study adopted a quantitative research methodology and probability cluster sampling technique was employed. A number of 116 oil and gas companies originated from 19 developing countries were included in the sample. To measure the content-quality of environmental disclosure, a 42-items disclosure index, scoring scheme and decision rules were developed by adapting pertinent established indices and decisions rules of prior studies. Annual reports, stand-alone reports and environmental related sections on homepages were downloaded from companies' websites. Data on explanatory variables were collected from either annual reports or corporate websites.

Using the index and scoring scheme, content analysis was conducted. Thus, annual reports, environmental stand-alone reports, environmental related sections on

corporate homepages were carefully reviewed and related data extracted and coded into copies of coding sheet that has been designed for this purpose. The valid coding sheets were then entered into database of SPSS software, and then different statistical analyses were adopted.

Prior to data analysis process, a process of cleaning and screening of data was conducted. Thus, collected data was checked for missing and outliers values. A few cases with outlier values were detected. Further checking revealed that they could not be considered unrepresentative of the population, and therefore were not excluded from the sample. In addition, goodness of data was ensured by testing data validity and reliability.

The data was analyzed using different statistical analysis techniques. First, the researcher employed descriptive analysis to determine the background statistics of the study variables. Second, univariate analysis was conducted. Thus, to investigate the differences between mediums of environmental disclosure (namely, annual reports, stand-alone reports, and corporate homepages) regarding the disclosure content-quality, analysis of variance (ANOVA) was used, while, correlation analysis was also used to examine the relationships between the dependent variable and each independent variables. Thirdly, multivariate analysis using the ordinary least square multi-regression was used to examine the relationships between the independent variables and the dependent variable of the sample companies.

Moreover, environmental information was analyzed as reported in each reporting media, individually and in aggregate. Thus, to investigate whether there is any

difference between different environmental reporting mediums (i.e. annual report, stand-alone report, and corporate homepage) in regard of their disclosure content-quality, each medium was analyzed and coded separately, whereas the three media were analyzed and coded in aggregate (all together), to examine the relationships between the independent variables and the dependent variable.

7.3 Findings of the Study

The number of companies investigated in this study is 116 belonging to nineteen countries. Descriptive statistics revealed that about twenty three percent of companies (n=27) belonged to two countries (India = 16, China =11), while the lowest number of companies (3 companies) belonged to Colombia, which represents 2.6 % of the total sample.

The descriptive statistics for the disclosure index (dependent variable) revealed that, the total scores in annual reports, stand-alone reports and homepages range from 33 to 106 scores with an average of 68.98 scores (54.75%). The descriptive analysis for the environmental disclosure content-quality also revealed that, the means of scores across different disclosure media are varied. Particularly, the mean of annual reports scores is 52.63, for stand-alone reports 65.64 scores and 38.53 scores for homepages. These results indicate that, there is variation in the content-quality of environmental disclosure among the three mediums, and suggest that stand-alone reports have the highest level of environmental discourse content-quality, while, the corporate homepages have the lowest level.

The results also revealed that the level of environmental disclosure content-quality differs across different categories. The category “sustainable development“ has the highest level of the disclosure content-quality with average mean of scores 2.123, whereas the category of “spills & environmental incidents” has the lowest level of the disclosure content-quality with average mean 0.80. With respect to all disclosure items, the results indicated that the item “conservation of natural resources“ under the category “sustainable development“ has the highest disclosure content-quality with mean of 2.78, while the item “future environmental operating costs” under the category “economic factors” has the lowest disclosure content-quality with mean of 0.28.

In addition, the data of independent variables was also descriptively explored. Thereafter, in order to investigate the hypotheses of the study, the data was analyzed using one-way analysis of variance, Pearson correlation and multiple regression. The result of one-way analysis of variance (ANOVA) confirmed that there is a statistically significant difference among the three mediums of environmental disclosure.

Univariate and multivariate analyses were utilized to examine the relationships between the twelve independent variables and the dependent variable. Specifically, the univariate (Pearson correlation) analysis was used for the relationships between the dependent and each independent variable individually, and the multivariate (multiple regression) analysis was used to study the relationships between the dependent variable and the independent variable in a simultaneous manner. The results of these analyses are highlighted below:

The results of Pearson correlation revealed that, size of company, close to market, foreign ownership, profitability, leverage, multi-nationality and membership of industry's associations, are positively related with content-quality of environmental disclosure ($p < 0.01$, two-tailed). Ownership concentration, institutional ownership and state ownership, are negatively related to the content-quality of environmental disclosure ($p < 0.01$, two-tailed). In addition type of company, is marginally positively related with the content-quality of environmental disclosure at a significance level of 0.05. Inconsistent with prediction, environmental certification is not related to the content-quality of environmental disclosure.

In multivariate analysis, the regression model used is presented as follows:

$$CQLEDIS = \alpha + \beta_1 \text{ SIZE} + \beta_2 \text{ TYP}CO + \beta_3 \text{ CLSMAR} + \beta_4 \text{ OWNCON} + \beta_5 \text{ FOROWN} + \beta_6 \text{ INSTITOWN} + \beta_7 \text{ STOWN} + \beta_8 \text{ PROFIT} + \beta_9 \text{ LEV} + \beta_{10} \text{ MULTINA} + \beta_{11} \text{ ENVCERT} + \beta_{12} \text{ INDMEM} + \varepsilon$$

The results of the multiple regression analysis of the association between the twelve independent variables (namely, company size, type of company, close to market, ownership concentration, foreign ownership, institutional ownership, state ownership, profitability, leverage, multi-nationality, environmental certification, and membership of industry's associations) and the environmental disclosure content-quality in annual reports, stand-alone reports and homepages of a sample of oil and gas companies in developing countries show the model to be statistically significant ($R^2 = 0.854$, $F = 50.195$, $P = 0.000$), which implies that independent variables explain 85.40 percent of the variance in environmental disclosure index. Therefore, it is concluded that the model is successful in explaining the content-quality of

7.4 Implications of the Study

environment disclosure variations in annual reports, stand-alone reports and corporate homepage of developing nations' oil and gas firms.

The results indicate that while some variables are able to explain the content-quality of environmental disclosure, some are not. Specifically, five independent variables were found to be positively and significantly associated to the dependent variable. The results revealed that, company size, foreign ownership, profitability, leverage and membership of industry's associations are positively related to environmental disclosure content-quality. Whereas type of company, close to market, ownership concentration, institutional ownership, state ownership, multi-nationality and environmental certification are not significantly related to the environmental disclosure content-quality.

7.4 Implications of the Study

Both theoretical and practical implications of the study are discussed in the following sections.

7.4.1 Theoretical Implications

This study enriches the existing environmental disclosure literature. The study contributes to the literature of developing countries where little research concerning environmental disclosure content-quality has been done. By examining the content-quality of voluntary environmental disclosures made by oil and gas companies, the findings of this study provide more insights into the current status of environmental disclosure content-quality in an environmentally sensitive industry. This study also contributes to the environmental disclosure quality literature by combining three

reporting mediums, particularly, annual reports, stand-alone reports and corporate websites. Furthermore, this study contributes to the environmental disclosure literature by being the first study that compared between different media (namely, annual reports, stand-alone reports and corporate homepages) based on the content-quality of disclosure.

This study relies on multiple theoretical perspectives (namely, political economy, stakeholder and legitimacy theories) to explain environmental disclosure content-quality. The results of this study provide evidences that support the three theories that the study relied on. The results of this study contribute to the theory by providing additional evidences on the relationship between some factors and environmental disclosure content-quality. In this regard, the findings of this study indicate that some variables, particularly, size, foreign ownership, profitability, leverage and membership of industry's associations affect the content-quality of environmental disclosure. Therefore, the results of this study contribute to the literature by supporting the results from prior studies, as well as extending the framework of determinants of environmental disclosure content-quality through empirical evidence on the relationship between environmental disclosure content-quality and membership of industry associations that was not previously subject to empirical test. Thus, the present study findings contribute to the enhancement of understating of the dynamics of environmental disclosure practices.

7.4.2 Practical Implications

The findings of this study have many implications for various interested parties. The present study provides insights into environmental disclosure of a single highly

environmentally sensitive industry. The study focuses on the content-quality of environmental disclosure in different reporting media by oil and gas companies across several countries. By assessing the content-quality of environmental disclosure, it enables once to identify of the strengths and weaknesses in environmental disclosure of the sample companies, therefore, advances our understanding of current disclosure practice by oil and gas industries in developing countries. Understanding the ED practices of oil and gas companies enables various interested parties, such as, investors, creditors, governments, regulators and standard setter, and environmental groups to determine the quality of ED, and to assess the requirements for environmental information.

Thus, this study may motivate oil and gas companies in developing countries to provide environmental information in their annual reports, stand-alone reports and websites. Particularly, the findings may help the companies to focus on what should be disclosed and how to disclose. In this respect, the disclosure index provides a guide to best practice of environmental disclosure.

In addition, by identifying the state of environmental disclosure practices and understanding of its determinants, the results of this study would benefit the policy makers, regulators and reporting standards setters in proposing laws and regulations, issuing new standards improving environmental reporting guidelines, which in turn will lead to more transparency and better quality of environmental disclosure.

The current study also contributes to prior literature on environmental disclosure by focusing on the variance in the content-quality of environmental disclosure among different reporting mediums (namely, annual reports, stand-alone reports and

between the companies which are varying in their size, foreign ownership, profitability, leverage and membership of industry's associations. Therefore, the corporate homepages). This enables interested parties understanding of how companies use different reporting media to disclose their environmental information. Specifically, for information users, it is important to know which medium/s is/are better to be relied on to help in decision making of information users. Thus, the findings of this study will facilitate an in-depth understanding of the selection of disclosure medium of environmental information. In this respect, however, as the study suggests that the content-quality of environmental disclosure in the stand-alone reports is higher than those in annual reports and websites. Hence, one suggestion would be to give more attention to stand-alone reports for obtain environmental information and do not rely solely on annual reports.

The results indicated a difference in environmental disclosure content-quality between the companies which are varying in their size, foreign ownership, profitability, leverage and membership of industry's associations. Therefore, the results of this study contribute to the literature concerning reasons for the difference of environmental disclosure between oil and gas companies. However, it is expected that the implications of the results of the study are significant to management and different types of stakeholders, in that they provide a clear indication of environmental reporting quality that can be expected of a company, depending on different factors. Thus, the findings help the stakeholders to understand how various factors affect a company environmental disclosure quality, and therefore, understand why environmental disclosure quality vary from company to company. Moreover, the findings encourage information users to lobby for more and high quality information disclosure.

7.4.3 Methodological Implications

Finally, this study also makes a methodological contribution to the literature by constructing an environmental disclosure quality index, which can be considered as comprehensive enough –to some extent- and suitable for oil and gas industry, as it includes specific environmental disclosure items for this industry. Thus, the disclosure index of this study can be used as a tool for future oil and gas industry corporate environmental disclosure related research.

7.5 Limitations of the Study

There are several limitations in this study. First, this study adopted simple cluster (single-stage cluster) sampling method by where the population was divided into several clusters (in this study are countries), after which a number of clusters (countries) were determined and selected, and then all elements (companies) in each cluster were selected. This approach did not allow the researcher to ensure that selected sample represents different companies groups. In addition, distribution of sample companies among different groups of companies was not equal and on top of this, the sample covered 19 countries belonging to four continents, where the countries are not equally distributed among the continents.

Second, this study covered developing countries in which the examined phenomenon is different to that of developed countries. So, the results of this study could not be generalized beyond the developing countries. Furthermore, the study is limited to the oil and gas industry; therefore, the results may have limited external validity beyond the industry settings. As a result, the present study fails to offer an extensive overview into other industries. Nevertheless, concentrating on a single industry

controls for unknown factors that may impact voluntary disclosure decisions that differ from one industry to another (Ling, 2007).

Third, sources of data is another limitation of this study, as it concentrates on three environmental disclosure media, which are annual reports, stand-alone reports and corporate homepages. However, there are various media that companies make use of and these include brochures, advertising, promotional leaflets, press releases, financial news media, mass mediums advertisement vehicles (radio, television, and newspapers and magazine), CDs and video tapes, discussions and meetings with financial analysts and journalists. Thus, the conclusions drawn are limited to the information disclosed in the three media covered. Nevertheless, annual reports, stand-alone reports and corporate homepages were used in this study because they were viewed to be the most important documents, and several other communication means are not frequently utilized by companies. There is however the possibility that some environmental disclosures have been overlooked.

Fourth, the sample size is restricted to only those companies with websites and published annual reports and stand-alone reports in the English language on their websites. As well as, data unavailability of the true population of oil and gas companies in developing countries confines the determination of whether or not the sample actually represents the population, which questions the results generalizability to the population at large. Specifically, the sample companies belong to nineteen developing countries, which may not represent other populations from other developing countries. Therefore, when applying the results from this study to the general population, caution is recommended.

Although the sample is restricted to companies that publish their reports in the English language, it will not have a significant impact on the results because most reports are published in the English language, as those companies belong to an industry such as oil and gas industry which is considered as one of most globalized industries, therefore, mostly using the English as a business language.

Fifth, this study made an assumption that, each reporting media has the same importance for all information users in terms of measuring disclosure quality, which may not be true, because some mediums may have more importance for some users than others. Also, the same importance was given to all environmental items reported though different reporting channels, ignoring the fact that, different channels have different importance, because of several reasons. For example, annual reports have more credibility as they are audited.

Sixth, data obtained from various reporting media via content analysis is susceptible to subjectivity as the same document can be interpreted in a different way by different researchers. In order to lessen such subjectively, the researcher pre-tested and made adjustments to the instrument to make it suitable to the oil and gas industry in developing countries in which this research was undertaken. Nevertheless, subjectivity remains inherent with content analysis technique. Moreover, another limitation inherent with content analysis of this study is that if a company does not disclose an item, it is taken as a non-disclosure, therefore given a score of zero. Whereas for some companies, non-disclosure may mean that item is irrelevant to them. However, this should not affect the results significantly.

In addition, there are some limitations inherent with the instrument used for content analysis (i.e. disclosure index), as there is no general accepted theory that offers guidance on the selection of items to be included in a disclosure index (Marston & Shrives, 1991, Tantish, 2003). Selection of items of a disclosure index is a subjective decision of the researcher (Ingram and Robbins, 1992), and as such, environmental disclosure has witnessed a dramatic improvement during time. Therefore, there is a possibility that some environmental items have been missed. However, to ensure that the disclosure index of this study is comprehensive enough to cover existing disclosure practices among sample companies, and is suitable for oil and gas industry, this study developed index by adapting pertinent established indices. In addition, preliminary content analysis of annual reports, stand-alone reports and homepages of a number of sample companies was conducted to seek current and up-to-date environmental issues of oil and gas companies. Nevertheless, this index could be criticized as a simple and general disclosure index.

Seventh, this study treats different countries in the same context so, consequently, the effect of country of origin, and institutional factors (such as country's economic level cultural factors, and legal environment factor) were omitted in this investigation. Although the sample countries of this study all characterized as developing countries, but in fact each country may have unique characteristics. Finally, this study examined the relationship of twelve factors and environmental disclosure content-quality and omits other factors that might affect environmental disclosure content-quality. Lastly, given that this study has considered the analysis for only single year, this may restrict the generalization of findings, as well as focusing on only single

period does not enable us to identify the trends in environmental disclosure within the oil and gas companies in developing countries.

7.6 Suggestions for Future Research

Based on the research findings and the limitations, a number of research opportunities are created. Therefore, some recommendations for future research are outlined below:

To ensure that selected sample represent different companies groups, different groups of companies should be taken into consideration and the sample should be equally (or approximately equal) distributed among groups. This can be ensured by adopting a more complex sampling method, such as multi-stage cluster sampling involves several stages (Hoshaw-Woodard, 2001), this could be considered in future research. In addition, future research could take a sample where all the countries are equally distributed among different countries.

This study is limited to the oil and gas industry, and it does not represent companies of other industries. A comparative study of the environmental disclosure practice for different industries in developing countries might also be fruitful.

The current study covers developing countries in which the studied phenomenon is different to that of developed countries. Related studies may be conducted in developed nations to compare between them and the present study. In addition, future research might extend the scope of this study by involving comparative studies between developing and developed countries.

This study focused on the three main channels of environmental disclosure. As companies are using different channels and are likely using other channels to disclose environmental information, future research should investigate a wider range of those channels. Thus, besides the reporting mediums covered in this study, other common channels, such as, advertisements, environmental brochure or corporate booklets, newspapers and magazines, television and radio, could be covered by future research. Moreover, future research could include reports and information that are published in other languages. Specially, the most widely used languages could be considered by future research. Thus, besides the reporting mediums covered in this study, other common channels such as advertisements, environmental brochure or corporate booklets, newspapers and magazines, television and radio, could be covered by future research. Moreover, future research could include reports and information that are published in other languages.

This study covers 19 developing countries belonging to four continents, and different countries may be at different stages of development²⁸ and/or with different business environments and cultures. Thus, it might be of interest to study the effect of country of origin on CED quality. More specifically, investigation of the impact of country level variables such cultural factors, legal environment, level of development (i.e. low income, lower middle income and high income as per WB income thresholds) might also be fruitful. It would also be interesting to replicate this study in other developing countries.

²⁸Even though, the sample countries are developing countries, but, they are not in the same level of developing taking into account that different categories of developing (e.g. low, medium and high levels of developing based on classification of World Bank).

variables and the dependent variable, the three reporting media (i.e. annual reports, stand-alone environmental reports and corporate homepages) covered by this study

To reduce the subjectivity inherent with disclosure index and content analysis process, it was suggested that the disclosure indexes should always be renewed and improved (Murtanto, 2004), and content analysis methods could be more refined (Bayoud *et al.*, 2012). Thus, future research should use more refined and recently renewed disclosure index and introduce new items not addressed by the current study, as well as adopt more refined content analysis method. Moreover, future research could develop more specific and weighted index that focuses on more specific environmental disclosure items for oil and gas industry. Future work could involve extending the investigation to areas in addition to environmental reporting, such as, social, community, ethical, sustainable reporting.

For the purpose of examination of the relationships between the independent variables and the dependent variable, the three reporting media (i.e. annual reports, stand-alone environmental reports and corporate homepages) covered by this study were analyzed and coded, therefore, the quality of disclosure was scored in aggregate. It would be interesting to know whether the independent variables have same effect on quality of environmental disclosure in each reporting media. Thus, future study may examine relationship between independent variables used in this study and the quality of environmental disclosure in each individual reporting medium, and compare the results of the three analyses. In addition, given the considerable variation in the content-quality of environmental disclosures in different reporting mediums, it is interesting to investigate why content-quality of environmental disclosure differ across reporting mediums.

This study examined the relationship of twelve factors and CED content-quality - further research could incorporate other independent variables that may affect the

environmental disclosure quality. In addition, other theories could be used to better understand environmental disclosure and predict its motivations.

Finally, a longitudinal study could be conducted to investigate the effects of changes in the independent variables used in this study on the environmental disclosure quality and provided a more robustness results, as well as, such study will help to establish the trends of corporate environmental disclosure and assess whether disclosure quality has improved over time in oil and gas companies in developing countries.



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APPENDIX 1

Selected Previous Studies on Social and Environmental Disclosure

| Study | Country | Reporting Medium | Dependent Variable/ Focus of Study | Independent Variables | Sample and Method | Findings |
|-------------------------|---------|--|---|--|--|--|
| Wiseman (1982) | US | Annual reports | The quality and accuracy of environmental reporting | Environmental performance | 26 of the largest environmentally sensitive firms in the United States for years 1972, 1974 and 1976, using content analysis | Results revealed that the environmental reporting was vague and incomplete in nature and quantitative environmental information was generally lacking. |
| Zeghal and Ahmed (1990) | Canada | Annual reports, brochures and mass mediums advertisement vehicles (radio, television, and newspaper) | Social disclosure | | 15 large Canadian firms in banking and petroleum industries for 1981 and 1982, using content analysis | The study indicated that in terms of the number of words, brochures play the most important role in the social information disclosure. They are followed by the annual reports, whereas advertisements play a very minor role in the total social information disclosure |
| Patten (1991) | US | Annual reports | Social disclosures | Public pressure (measured by size and industry classification) and firm profitability (measured by return on assets and return on equity). | 128 listed Fortune 500 firms, using content analysis | Results indicated that size and industry classification are significant explanatory variables whereas profitability variables are not. |
| Roberts (1992) | US | Annual reports | The level of corporate social disclosure | Stakeholder power, strategic posture and economic performance, and control for company | 130 US corporations, using content analysis | Results indicated that measures of stakeholder power, strategic posture and economic performance are significantly related to levels of corporate social disclosure. |

| | | | | age, industry classification and firm size | |
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| Buhr (1994) | Canada | Annual reports, environmental reports, and additional external disclosures | Environmental disclosure | 183 annual reports from 40 listed companies; one environmental report; 79 pieces of additional external disclosure using content analysis. As well as, 17 interviews with disclosure preparers in eight companies | The study showed that there is a difference between annual reports and environmental reports with regard to quantity, subject matters, type of information, and tense used. While the study found no difference in the quantity of environmental disclosure provided through annual reports and SOC filling mandated by Securities regulations, there were few differences found between the natures of the environmental disclosure provided through the two media. The results on possible differences in information type included in the two media were not conclusive. In addition, the study revealed that there are no differences between SOC filling and annual reports with regard to the use of subject matter. Thus, the study found differences between some media, but found no difference between other media. |
| Tilt (1994) | Australia | Annual report, supplements, booklets or leaflets produced to address the social activities, advertisements and product labels. | Pressure groups' perceptions of CSD in various media | 59 respondents from 59 public listed companies, using questionnaire | The study indicated that there is overwhelming consensus that the amount of CSD produced is not sufficient. Advertisements are seen as being the easiest form of CSD to understand, but are low in credibility. Annual reports, the most commonly used medium for CSD and scored a median rank for both understanding and credibility. Supplements however, were seen to be easier to understand than annual reports, but lower in credibility. Advertisements were the most commonly received type of CSD, with annual reports and "other" types of CSD also being received in substantial amounts. |

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| Deegan & Gordon (1996) | Australia | Annual report | The level of corporate environmental disclosure | Environmental group membership, environmental sensitivity and firm size | 197 Australian listed companies | The amount of voluntary environmental disclosure was found to be low, but increases over time. A significant positive association was found between environmental disclosures and each of environmental group membership, environmental sensitivity of the industry and firm size. |
| Deegan & Rankin (1996) | Australia | Annual Report | Environmental reporting practices | Environmental performance | 20 EPA-prosecuted Australian companies for 1990 to 1993 matched with non-EPA-prosecuted Australian companies. | The study found that environmental reporting is negatively correlated with actual environmental performance, and prosecution produces greater positive environmental disclosures. |
| Hackston & Milne (1996) | New Zealand | Annual report | The level of social and environmental disclosure | Size, industry type, and profitability | 47 companies, using content analysis | The results revealed that companies make most social disclosures on human resources, with environment and community themes also receiving significant attention. Narrative information is mostly presented, and information tends to be positive rather than negative. Size and industry are associated with the amount of disclosure, while profitability is not. |
| Halme and Huse (1997) | Scandinavian countries (Finland, Norway, Sweden and Spain) | Annual reports | The extent of corporate environmental reporting | Ownership concentration, board size, industry and country | 140 companies from Scandinavian countries, using content analysis | Results revealed a significant correlation between industry and environmental reporting as corporations in polluting industries reported most on the environment. However, the results did not indicate any significant relationship with ownership concentration or the number of board members. |
| Adams, <i>et al.</i> (1998) | France, Germany, the Netherlands, Sweden, Switzerland, and the U.K | Annual reports and press release | Types, amount and nature of social disclosures | Company size, industry grouping and country of domicile | 150 European companies | The amount and nature of information disclosed varies significantly across countries. Company size is significantly and positively associated with all types of social disclosures, while industrial grouping is related to environmental and some employee disclosures only. |

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| Cormier and Magnan (1999) | Canada | Annual reports | Environmental disclosure | Financial condition | 212 Canadian public firms from three industries, including oil refining, petrochemical and steel industry, for the period of 1986-1993. | The study indicated that firms in good financial condition chose to disclose more information than those in poor financial condition. |
| Zain (1999) | Malaysia | Annual reports | Social disclosure | Company size, industry, portability, and country of ownership | 100 major Malaysian companies, using content analysis and personal interview | The study indicated that human resource information was the main social theme disclosed. The study also indicated that the size of company was the major factor of disclosure. |
| Williams and Pei (1999) | Australia, Singapore, Malaysia, and Hong Kong | Annual reports and corporate websites | Corporate disclosures | social | 172 companies from four countries (Australia, Singapore, Malaysia, and Hong Kong), using content analysis. | The results revealed that Australian and Singaporean companies disclosed more CSR information on their websites than in annual reports, while, for companies belong to Malaysia and Hong Kong there were no significant differences between the two mediums. However, the study showed that companies in all countries appeared to provide more narrative information on their websites than annual reports. |
| Imam (2000) | Bangladesh | Annual reports | Social disclosure | | 40 Bangladeshi listed companies Using content analysis | The study concluded that the disclosure level was very poor and inadequate. |
| Belal (2000) | Bangladesh | Annual reports | Environmental reporting | | 30 Bangladeshi listed companies, using content analysis | The quantity and the quality of environmental reporting is an inadequate and poor |
| De Villiers and Barnard (2000) | South Africa | Annual reports | Extent of environmental reporting | | listed South African mining companies and Financial Mail Top 100 industrial companies from 1994 to 1999, using content analysis and questionnaire | The study revealed that mining companies offer more environmental information disclosure in their annual reports compared to their counterparts. The study also highlighted that larger companies are more inclined to report environmental information in comparison to smaller ones. |

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| Belal (2001) | Bangladesh | Annual reports | Social and environmental reporting | | 30 Bangladeshi listed companies, using content analysis | The quantity of information disclosed is very low. The nature of disclosure is mainly descriptive |
| Buhr and Freedman (2001) | Canada and USA | Annual reports, security exchange filings (the 10 K in the US and the Annual Information Form in Canada) and environmental reports. | Environmental reporting | Cultural and institutional factors | 112 companies (56 pairs) for 1988 and 136 companies (68 pairs) for 1994, using content analysis | The study found that various firms that generate environmental reports are shifting much of their voluntary environmental performance information from their annual reports to their environmental reports to prevent information duplication. The study also concluded that the disclosure of Canadian firms increased more dramatically than the disclosure of US firm's disclosure, which was initially greater, and concluded that Canadian culture and institutional infrastructure is more conducive to the production of environmental disclosure than US counterparts. Canadian firms produced a greater level of voluntary environmental disclosure, especially in the environmental report, while the US firms produced more of the mandated disclosure in the 10 K and annual report. |
| Gray <i>et al.</i> (2001) | UK | Annual report | Total social and environmental disclosure | Turnover, capital employed, number of employees, profit and industry classification | 100 U.K. firms for 1988 to 1995, using content analysis | The study revealed that there is relationship between corporate social and environmental disclosure and firm size, profit. However the study showed that these relationships change from industry to industry highlighting the significant influence of industry affiliation. |
| Tilt (2001b) | Australia | Annual reports | Disclosure relating to corporate environmental policies | Corporate environmental policies | 40 Australian listed companies, using content analysis | The study revealed that Australian companies are behind other countries in environmental reporting trends, and there are some major differences between the content of their environmental policies and their disclosures. The study revealed that while companies appear to be reporting on their environmental performance internally, they place a low priority |

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| | | | | | | on providing environmental performance data to external parties. The study also revealed that there is no link between CEP and environmental disclosure. |
| Adams (2002) | UK and Germany | Undefined | The extensiveness, quality, quantity and completeness of corporate social and ethical reporting | Corporate structure and governance procedures; extent and nature of stakeholder involvement; extent of involvement of accountants; views on recent increase in reporting, reporting bad news, reporting in the future, regulation and verification; perceived costs and benefits of reporting; and corporate culture. | Seven large multinational companies in the chemical and pharmaceutical sectors of the UK and Germany, using interviews. | The study found that the process of reporting appears to depend on country of origin, corporate size and corporate culture. Enhancing corporate image and credibility with stakeholders was the main motivation of reporting. |
| Patten (2002a) | US | Annual reports | Level of environmental disclosure | of Environmental performance | 131 US companies, using content analysis | The study found a significant negative relation between level of environmental disclosure and environmental performance. In addition the study indicated that the level of environmental disclosure of companies from non-environmentally sensitive industries is more affected by environmental performance than the disclosure of companies from environmentally sensitive industries. |
| Cormier and Magnan (2003) | France | Annual reports and environmental reports | Environmental reporting | Information costs (proxied by risk, capital markets, trading volume, widely held ownership, and foreign ownership), proprietary costs (proxied by | 246 firm year Observations, from 1992 to 1997, using content analysis | The study found that the average environmental disclosure increased from 1992 to 1997. The study also revealed that firm size, proprietary costs, information costs, media visibility and industry are determinants of environmental disclosure. |

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| | | | | accounting return, market return, and leverage), media visibility, and controlling for firm size, fixed assets age and in registration with SEC | | |
| Tantish (2003) | Malaysia | Annual reports | The amount of social and environmental disclosure | Firm size, ownership and stricter, industry type, raising capital and size of audit firm | Malaysian companies listed on the main board Kuala Lumpur Stock Exchange, using content analysis | The study revealed that firm size and ownership are weakly related with the amount of social and environmental disclosure, whereas other variables are not. |
| Al-Tuwaijri, <i>et al.</i> (2004) | US | Annual reports | Environmental disclosure, environmental performance, economic performance | and Environmental performance, economic performance, unexpected earnings, pre-disclosure environment, growth opportunities, profit margin, environmental exposure, environmental concern, public visibility, firm size. | 198 US Standard & Poors 500 firms using content analysis | The results suggested that good environmental performance is significantly associated with good economic performance, and also with more extensive quantifiable environmental disclosures of specific pollution measures and occurrences. |
| Campbell (2004) | UK | Annual report | Volume of environmental disclosure | membership of environmental lobbying organizations and environmental sensitivity of the industry | 10 UK companies, using content analysis | Results indicated an increase in the volume of voluntary environmental disclosure over years, and a strong correlation of that disclosure to membership of environmental lobby groups. Also, a significant positive association was found between environmental disclosure and the environmental sensitivity of the industry. |

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| Elijido-Ten (2004) | Malaysia | Annual reports | The quality and quantity of environmental disclosure | Shareholder power (ownership concentration, creditor power (leverage), government power, environmental concern, ISO 14001 certification, average return on assets, change in firm value, company size, company age | 40 companies, using content analysis | The results indicated that the majority of environmental disclosures are still confined to the provision of general or vague descriptions. The results also revealed that government power and environmental concern are significantly positively associated with the quality and quantity of environmental disclosure. Whilst, others variables appeared to be insignificant. |
| Hamid (2004) | Malaysia | Annual reports | Social disclosure | Firm size, financial performance, corporation age, listing status, and company profile | 48 banking institutions , using content analysis | The results proved that size, listing status and age of business do have significant influence on CSR disclosure, while the profitability does not. |
| Yusoff and Lehman (2004) | Malaysia and Australia | Annual reports | Environmental disclosure practices | Environmental sensitivity, financial performance, and ISO 14001 certification | The top 50 Malaysian and Australian public listed companies, using content analysis | The findings indicated that Australian companies disclosed more and extensive environmental information compared to Malaysian companies. The factors that have some level of impact on environmental disclosure practices among Australian companies are financial performance and ISO 14001 certification, while ISO certification was found to be the sole factor for Malaysian environmental disclosure practice. |
| Haddock(2005) | UK | Corporate websites | The extent of environmental disclosure | Firm size, turnover, public listing, brand-name companies, consumer goods companies and media allegations information | 59 UK food companies, using content analysis | The results indicated that turnover, public listing, brand-names, consumer-focus and media allegations all affected provision of environmental information by UK food companies |

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| Haniffa and Cooke (2005) | Malaysia | Annual reports | The extent of corporate social disclosure | Culture (background of directors and shareholders), corporate governance (board composition, multiple directorships and type of shareholders) and firm-specific characteristics (size, profitability, multiple listing and type of industry). | 139 Malaysian companies, using content analysis | The study found a strong relationship between corporate social disclosure and boards dominated by Malay directors, boards dominated by executive directors, chair with multiple directorships and foreign share ownership. For firm-specific characteristics, the study proved that size, profitability and multiple listings and type of industry were significantly related to CSR, while gearing did not seem to be related to CSR. |
| Cormier <i>et al.</i> (2005) | Germany | Annual report and Stand-alone report | The quality of environmental disclosure | Information costs (as captured by risk, reliance on capital markets, trading volume, concentrated ownership and foreign ownership); financial condition (as captured by market return and leverage); media pressure (as proxied by media exposure); and fixed assets age, firm size and SEC registrant | 55 German companies for years from 1992 to 1998, using content analysis | Results indicated that environmental disclosure quality was related information costs (measured by risk and ownership), media pressure, and industry membership, while there was no relation between environmental disclosure and financial condition. Moreover, fixed assets age, firm size determined the level of environmental disclosure |
| Brammer & Pavelin (2006) | UK | PIRC environmental reporting 2000 survey, and news media reports | The level and quality of voluntary environmental disclosure | Firm size, industry type, environmental performance, media visibility, firm ownership, profitability, leverage and board composition. | 447 large U.K., using content analysis | Both level and quality of environmental disclosure are positively related with larger firms, highly sensitive industries and less leveraged companies; is negatively associated with the size of the largest shareholding; and has no significant association with profitability, media visibility or the number of non-executive directors. While, environmental performance is significantly and positively related to the quality |

of environmental disclosure, but has no significant relationship with the level of environmental disclosure.

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| Hossain, <i>et al.</i> (2006) | Bangladesh | Annual reports | The extent and nature of social and environmental reporting | Firm size (proxied by total assets, and sales turnover), profitability (proxied by net profit to sales, and rates of return on asset), presence of debentures in the corporate annual reports, subsidiaries of multinational company, audit firm (international link of auditing firms, total of audit fees), industry type | 107 listed companies, using content analysis | The study indicated significant differences in levels of social and environmental disclosure. The study also indicated that the level of social and environmental disclosure of Bangladeshi companies is low, as very few companies in Bangladesh are making efforts to provide social and environmental information on a voluntary basis, which are mostly qualitative in nature. Regarding the regression test, the results showed that corporate environmental disclosure levels are associated with some company characteristics while others are not. Specifically, industry type, presence of debentures in the corporate annual reports, and the net profit margin were found to be positively significant in determining environmental disclosure levels. |
| Yusoff <i>et al.</i> (2006) | Malaysia | Annual reports | Environmental disclosure | Stakeholders' demands for information, self-environmental concern, compliance and future regulatory impact, increase in shareholders' value, and business operational improvements. | The top 50 companies listed on Bursa Malaysia, using content analysis | The study revealed high levels of environmental disclosure concerning current environmental engagements and future environmental plans/strategies. The key factors influencing environmental disclosure were stakeholders' concern, self-environmental concern and operational improvements. |
| Guenther <i>et al.</i> (2007) | Global | CSR reports | The status of environmental reporting practice | | 48 global mining, oil and gas companies, using content analysis | The study indicated that on average, the mining, oil and gas companies disclosed approximately 31% of the total GRI indicators (11 out of a total of 35 indicators). However, only 8% of total |

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| Huafang and Jianguo (2007) | China | Annual reports | Level of voluntary disclosure including environmental disclosure | Ownership structure (block holder ownership, managerial ownership, state ownership, legal person ownership and foreign listing/shares ownership), Board composition (proportion of independent directors and CEO duality, and firm size, leverage, firm growth and auditor reputation) | 559 Chinese firms, using content analysis | environmental indicators were disclosed with both high quantity and high quality. The study indicated that higher block-holder ownership and foreign listing/shares ownership were related to increased disclosure, while managerial ownership, state ownership and legal person ownership were not related to disclosure. An increase in independent directors increased corporate disclosure and CEO duality was associated with lower disclosure. The results also indicated that firm size was positively associated with disclosure, while firm growth was found to be negatively associated disclosure. However, disclosure was not associated to leverage or auditor reputation. |
| Kamla (2007) | Bahrain, Egypt, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Syria, and UAE | Annual reports | Social accounting and reporting | | 68 companies from nine Arab Medill East countries, using content analysis | Only 10 companies, 15% of the sample, provided some form of environmental information. In addition, most disclosed information related to employee issues, while, the level of disclosure in relation to the environmental dimension the lowest. |
| Brammer & Pavelin (2008) | UK | PIRC environmental reporting 2000 survey, and news media reports | The quality of voluntary environmental disclosures | Firm size, nature of its business activities, environmental performance, media visibility, financial resources, ownership composition and board composition | 447 UK companies, using content analysis | The quality of environmental disclosure is influenced by a firm's size and the nature of its business activities, while there is no association between the quality of environmental disclosure and the media exposure of companies. |

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| Branco and Rodrigues (2008) | Portugal | Annual reports and websites | CSR disclosure | Degree of international activity, company size, industry, consumer proximity, environmental sensitivity, and media pressure, Profitability and leverage | 49 listed company, using content analysis | The results indicated that CSR disclosure in the annual reports is more than websites. The results also indicated that company size and media pressure are significantly associated with the level of CSR disclosures, while other variables are not. |
| Amran and Devi (2008) | Malaysia | Annual reports | Social disclosure | Government and foreign affiliates | 201 Malaysian companies, using content analysis | Government share and dependence on the government have a positive association with CSR disclosure. |
| Rizk <i>et al.</i> (2008) | Egypt | Annual reports | The extent of social and environmental reporting | Private ownership, government ownership and industry membership | 60 Egyptian companies, using content analysis | The results indicated that the extent of CSR reporting is low and descriptive in nature. The results also indicated that government owned companies disclose more employee related information than private companies. While, private companies were found to disclose customer related, environment related, and community related information more than governmental owned companies. In addition, industry membership was a statistically significant factor relative to the category of disclosure. |
| Silva (2008) | New Zealand and Australian | Annual reports | Voluntary environment reporting | Public pressure (using company size, sector sensitivity, media coverage as proxies) and economic success (using short-term and profitability, long-term profitability as proxies). | Quantitative secondary data: 357 companies for 2002, and 266 for 2003, using content analysis. Qualitative data 52 companies using semi-structured interviews | The study revealed that the level of voluntary environmental reporting in the annual reports of New Zealand and Australian publicly listed companies is low and demonstrates poor content-quality. The study revealed also that content-quality of voluntary environmental disclosure is significantly and positively related to each variables of company size, sector sensitivity, specific media coverage, profitability (short-term and long-term), while the relation between the content-quality of voluntary |

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| | | | | | | | environmental disclosure and general media coverage was appeared to be negative. |
| Pahuja (2009) | India | Annual reports | Environmental disclosure practices | Sector, nature of industry, foreign association, control by large business houses, size, profitability, debt-equity ratio, exports and environmental performance | 91 large Indian manufacturing companies, using content analysis | | The results provided strong evidence in support of the influence of size, profitability, sector, industry and environmental performance on environmental disclosure practices. |
| Reverte (2009) | Spain | Annual reports | Corporate social responsibility disclosure | Corporate size, industry sensitivity, profitability, ownership concentration, international listing, media pressure and leverage | 46 Spanish companies | | Results indicated that corporate size, industry sensitivity, and media pressure are significantly associated with corporate social responsibility disclosure, while both profitability and leverage are not associated with such disclosure |
| Said <i>et al.</i> (2009). | Malaysia | Annual reports and corporate websites | Extent of corporate social responsibility disclosure | Board size, board independence, duality, audit committee, ten largest shareholders, managerial ownership, foreign ownership and government ownership and Firm's size and the profitability as control variables. | 150 Malaysian public listed companies using content analysis | | The results indicated that the level of corporate social responsibility disclosure in Malaysian companies is generally low. The results also provided that only government ownership and audit committee are positively and significantly correlated with the level of corporate social responsibility disclosure. |
| Tagesson <i>et al.</i> (2009) | Sweden | Corporate websites | The extent of social and environmental disclosure | Size, industry, profitability, ownership structure and ownership identity | 169 Swedish companies, using content analysis. | | The results indicated that company size and profitability are positively associated with the extent of social and environmental disclosure. State-owned companies disclose more social information on their websites than privately owned corporations do. The results also suggested that there are significant differences |

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| | | | | | | between different industries. |
| Hassan (2010) | UK | Annual reports and stand-alone reports | The quantity and quality of corporate social disclosure | Corporate characteristics (firm size, industry affiliation, profitability and multi-nationality); corporate governance characteristics (board size, board composition, corporate social responsibility committee and block ownership); and media pressure. | 317 UK companies in 2005 and 327 in 2006, using content analysis | The results showed that corporate social disclosure is associated with firm size, industry affiliation, board size, social responsibility committee, ownership diffusion, while media pressure was found to be associated with the quantity of CSR disclosure but not associated to the quality of such disclosure. |
| Sawani <i>et al.</i> (2010) | Malaysia | Corporate annual reports and other standalone reports. | Sustainability reporting and assurance practices in Malaysia | | Sample consists the ACCA MeSRA (Malaysian Environmental and Social Reporting Award) participants in 2007, using interviews, questionnaire surveys and content analysis of corporate annual reports and other standalone reports. | Most of the information relating to sustainability disclosure reported is integrated in the annual report and with no assurance statement due to low level of awareness and the absence of legislative pressure to commission the practice. The study also indicated that companies applied selective reporting on issues relating to monetary contribution predominantly due to minority shareholders' insistence on better return for their investment. |
| Abd Rahman <i>et al.</i> (2011) | Malaysia | Annual reports | The level of social responsibility disclosure | Size, age, profitability and leverage | 44 Malaysian government-linked companies, using content analysis | CSR disclosure by Malaysian government link companies to be limited but growing, and only size is significantly related to CSR disclosure |
| Islam and Islam (2011) | Bangladesh | Annual reports, press releases and stand-alone | The environmental disclosure | Public concern (news media attention) | Case study based on Niko company (a multinational oil and gas company | The study has found that the company annual reports and press releases adequately disclosed its environmental contingent liability, but they did not provide any information about the issue |

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| | | social responsibility reports | | | | operating in Bangladesh) over the period 2004-2007. | of the local community who were affected by the blowouts, instead the company utilized a stand-alone report to address this issue. |
| Suttipun and Stanton (2011) | Thailand | Annual reports | The amount of environmental disclosure | of | Company size, type of industry, ownership status, country origin of company, profitability | 75 companies, using content analysis | The results revealed that most of companies providing environmental information in their annual reports. Environmental policy, environmental activities, and waste management, are the themes of disclosure. The study also revealed that there is a positive relationship between amount of environmental disclosures and size of company. |
| Rupley <i>et al.</i> (2012) | US | Annual/ 10-K reports and stand-alone reports | The quality of corporate environmental disclosure | of | Environmental media coverage, institutional investor ownership (long-horizon and short-horizon institutional ownership) and multi-stakeholder governance (board independence, gender diversity, multiple directorships, separation of the CEO from the board chair position and the existence of a corporate social responsibility committee), and control for; firm size, profitability, industry sensitivity, regulation sensitivity and presence of a separate corporate | 127 US firms, using content analysis | The results revealed that the quality of environmental disclosure increased over time. The results also revealed that environmental disclosure quality is positively associated with board independence, board gender diversity, multiple directorships and firm size, while negatively associated with environmental media coverage. Additionally, results indicated that institutional investors exert influence over managerial decisions on environmental reporting only in the face of negative environmental media. |



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| Aburaya (2012) | UK | Annual reports | Corporate environmental disclosure | Board independence, role duality, board size, board meetings, education, community influence, cross-directorships, CER committee presence, audit committee independence, remuneration committee independence, nomination committee independence, ownership structure, institutional ownership | 229 UK companies, using content analysis | The results of the study revealed that the quantity of environmental disclosure in annual reports of UK companies is relatively low, while, the quality of such disclosure is comparatively high. The results also indicated that higher environmental disclosure quality is associated with the separation of the dual role of CEO and chairman as well as with higher frequency of board meetings. Whilst, board size and directors' education are not associated with the environmental disclosure quality. However, institutional ownership found to have insignificant relationship to total environmental disclosure quality, but is significantly and positively associated with compliance with environmental laws and standards disclosure quality, whereas significantly and negatively associated with other environmentally-related information disclosure quality. |
| Al-Drugi and Abdo (2012) | Libya | Annual reports | The level of CED. | Company size, company privatization, company nationality and company age | 43 national and foreign oil and gas companies from 2002 to 2009 using content analysis. | The results revealed that the level of environmental disclosure is low. The results also revealed that company size, company privatization and company's nationality have a positive relationship with the level of environmental disclosure. While, company age has a negative but insignificant relation with the level of environmental disclosure. |
| Bayoud <i>et al.</i> (2012) | Libya | Annual reports | The level of corporate social responsibility disclosure | Company age, industry type, and company size | 40 annual reports from Libyan companies' from 2007 to 2009, using quantitative (content analysis) and qualitative (interview) methods. | The quantitative findings revealed that there is a positive relationship between company age and industry type and the level of CSR, while, the qualitative findings indicated a positive relationship between all proposed factors (company age, industry type, and company size) and level of CSR in Libyan companies. |

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| Djajadikerta and Trireksani (2012) | Indonesia | Corporate web sites | The extent of CSED | 110 listed companies, using content analysis | The results suggested that the extent of CSED is low and the nature of disclosure is mostly descriptive. |
| Eljayash <i>et al.</i> (2012) | Algeria, Bahrain, Egypt, Kuwait, Libya, Qatar, Saudi Arabia, Tunisia, UAE | Annual reports | The quantity and quality of CED | 58 national companies, using content analysis | The results indicated that, overall; quantity and quality CED in Arab oil countries are still low. The results also indicated that the extent of environmental disclosures vary between companies according to country. Moreover, the study revealed that some national oil and gas corporations (Qatar, Saudi Arabia, and UAE) had provided a quality of environmental disclosure superior to similar corporations in other countries. |
| Eltaib (2012) | Australian | Annual reports and stand-alone sustainability reports | Environmental accounting disclosures | The 10 largest Australian oil and gas companies listed in Australian Stock Exchange over the period 2005-2010, using content analysis | The results showed that environmental disclosure trend fluctuated during the study period. The results also indicated that the most of the disclosed environmental information is favourable, non-financial, pure narrative and general information. |
| Oba and Fodio (2012a) | Nigeria | Annual reports | Quality environmental reporting | of Board characteristics (Board size, board independence, gender composition, foreign directors), and control for firm size, financial slack 21 Nigerian companies, using content analysis | The results evidenced that firm size, foreign directors, independent directors and financial slack have positive impacts on quality of environmental reporting. The study found no association between gender and quality of environmental reporting, while an inverse relationship was documented between board size and quality of environmental reporting. |
| Oba and Fodio (2012b) | Nigeria | Annual reports | The extent of environmental disclosures | 10 companies listed in Nigeria for the years of study 2006-2009, using content analysis | The results provided evidence on the poor environmental disclosure levels in the annual reports of sampled companies. The results also indicated that the oil and gas industry provided a better disclosure level but this difference was not significant. |

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| Setyorini and Ishak (2012) | Indonesia | Annual reports and standalone corporate social and environmental reports or sustainability reports | Level of corporate social and environmental disclosure | Firm's bonus plan (measured by ROA), leverage, size, Firm's earning management | 911 companies for the period 2005-2009, using content analysis | The findings indicated that the level of corporate social and environmental disclosure is associated with ROA, firm size, and firm earning management, whereas there is no association between the level of corporate social and environmental disclosure and leverage (debt/equity) |
| Summerhays and De Villiers (2012) | Global | Annual reports | The extent of environmental disclosure | | The largest six international oil companies, using content analysis | The findings indicated that the overall environmental disclosures of the oil companies increased after the oil spill. |
| Suttipun and Stanton (2012) | Thailand | Annual reports and corporate websites | The amount of environmental disclosure | | 50 companies, using content analysis | The study did not find different amount of environmental disclosures made in annual reports and on websites. |
| Sobbani <i>et al.</i> (2012) | Bangladesh | Annual reports and corporate websites | The sustainability disclosure | | All listed Bangladeshi banks, using content analysis | The study's results revealed that disclosure is taking place more in annual reports than on web sites. |
| Soliman <i>et al.</i> (2012) | Egypt | Annual reports | The extent of CSR disclosure | Ownership structure (institutional ownership, managerial ownership, and foreign ownership) | 42 Egyptian firms covering the three year period 2007-2009, using content analysis | The results indicated a significant positive relationship between CSR disclosure and institutional ownership and foreign ownership, whereas managerial ownership was found to be negatively associated with CSR disclosure. |
| Ahmad and Haraf (2013) | Malaysia | Annual reports | Extent, nature and quality of environmental disclosures | | 30 property companies listed on Bursa Malaysia, using content analysis | The findings revealed that companies do not appear to respond to the increased public concern due to recent landslide incidents by increasing the extent or quality of environmental disclosures in their annual reports. Both extent and quality of environmental disclosures are very low and most companies provide mostly soft disclosures. The findings also revealed that companies are not consistent in the extent, nature or quality of environmental disclosures made over time. |

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| Bowrin (2013) | Caribbean countries | Annual reports and corporate websites | The level of social and environmental disclosure | Firm size, industry affiliation, director independence, gender diversity and foreign influence, controlling for national culture, national economic systems, firm profitability, organizational culture. | In terms of factors influencing the amount of social and environmental disclosure, the study revealed that the amount of social and environmental disclosure was positively related to firm size, industry affiliation, foreign influence and organizational culture. Firm profitability, national culture, importance of public equity financing, gender diversity, and director independence were not statistically related to social and environmental disclosure comprehensiveness. |
| Chang (2013) | China | Social responsibility information reports | Environmental disclosure | Ownership structure (Ownership concentration, state ownership), and capital structure (Financial leverage, book value of long-term debt ratio or book value of short-term debt ratio) | The findings indicated that the extent of environmental disclosure is low (with means of 0.1744, 0.1918, 0.1942 and 0.2171 for the years 2008, 2009, 2010 and 2011, respectively). The study also revealed that the state ownership, financial leverage (debt to-total assets) and long-term debt have significant impacts on environmental information disclosure. |
| Choi <i>et al.</i> (2013) | Australia | Annual reports and sustainability reports (or equivalent) | The extent of information relating to carbon emissions level of carbon emissions (or and climate changes) | Industry (emissions intensive industries), level of carbon emissions, organizational visibility (firm size), profitability, leverage, corporate governance | The study revealed that the extent of carbon disclosure is positively influenced by the level of emissions, firm size, and quality of corporate governance. In addition, firms in emissions intensive industries also showed a positive relationship with the extent of carbon disclosure. |

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| Cuesta and Valor (2013) | Spain | CSR/sustainability reports, financial reports, corporate governance reports, and corporate websites | The quality of environmental, social and governance reporting | | 35 companies listed, using content analysis | The results indicated that the sampled companies failed to provide complete information on environmental performance (37%). |
| Harun <i>et al.</i> (2013) | Malaysia | Annual reports | The quality of sustainability disclosure | | 15 commercial banks in Malaysia, using content analysis | The study concluded that the disclosure quality is considered low. |
| Darus <i>et al.</i> (2013) | Malaysia | Website | CSR information via corporate websites | Ownership structure and board interlock | The 120 largest companies listed on Bursa Malaysia, using content analysis. | Overall quality of CSR information disclosed on corporate website proved to be generally low. Family and foreign ownership were significant factors in influencing the use of corporate websites to disseminate CSR information to stakeholders, while, board interlock was not. |
| Eljayash <i>et al.</i> (2013) | Algeria, Bahrain, Egypt, Kuwait, Libya, Qatar, Saudi Arabia, Tunisia, UAE | Annual reports | Environmental disclosure | | National and international companies operating in ten Arab petroleum exporting countries, using content analysis | Despite the slight increase in the environmental disclosure practices in national companies, the difference is still significant compared with international companies. |
| Haji (2013) | Malaysia | Annual reports | The extent and quality of CSR disclosures | Corporate governance (independent nonexecutive directors, board size, board meetings), ownership structure patterns (ownership concentration, director ownership, government | 85 companies listed on Bursa Malaysia | The findings indicated that director ownership, government ownership and company size were found to be significant in explaining both the extent and quality of CSR disclosures. |

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| | | | | | ownership) and company characteristics (company size, profitability, leverage) | | |
| Kamla and Rammal (2013) | UAE, Bangladesh, Bahrain, Saudi Arabia, Malaysia, Pakistan, Indonesia, Egypt, UK, Jordan and Qatar, | Annual reports and Websites | Social reporting | | | 19 Islamic banks from 11 countries, using content analysis. | The study results revealed that social disclosure of the Islamic banks emphasize their religious character through claims that they adhere to Sharia's teachings, but the disclosure lacks specific or detailed information relating to schemes or initiatives. |
| Kolk and Fortanier (2013) | Global companies | Annual reports | Environmental disclosure. | Internationalization (both degree and spread) | | 246 Global firms from the first 250 firms on the 2001 Fortune Global 500 list. | Results revealed a significantly negative relationship between the degree of internationalization and environmental disclosure, which is only partly mitigated by environmental governance and institutional quality in home and host countries. The relationship is only positive for firms in high-sensitivity sectors from high-standard countries. Findings are particularly strong for the degree of internationalization; and non-significant for dispersion/spread. |
| Momin and Parker (2013) | Bangladesh | Annual reports | Social environment disclosure | and al | Motivations for engaging in CSRR practices | Content analysis of seven Bangladeshi MNC subsidiaries over the period of 2002-2006. In addition, thirty-nine in-depth, semi-structured interviews with senior | The study concluded that CSRR practice in Bangladeshi MNC subsidiaries is limited. The study also revealed that multinational subsidiaries in Bangladesh have several motivations for engaging in CSRR practices, ranging from the pursuit of internal legitimacy with their parent to the pursuit of external legitimacy with powerful stakeholders. |

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| | | | | | | management in the seven Bangladeshi MNC subsidiaries were conducted | |
| Roitto (2013) | Finland | Annual reports | CSR rating | disclosure | Board composition (age of board members, Gender of board members, Independence of board members), Media exposure, Company size, Industry sensitivity, Institutional ownership, Leverage, Profitability, Liquidity, | 31 Finnish listed companies, using CSRHub overall rating | The study concluded that of the examined factors only two of them (age of board members, profitability) were found to be determinants of CSR disclosure rating, while others factors were not. |
| Said <i>et al.</i> (2013) | Malaysia | Annual reports | Level of environmental disclosure | of | Board characteristics (board size and board independence), firm characteristics (business type) and human capital characteristics (age, knowledge background and proportion of female directors) | 120 Malaysian public listed companies, using content analysis | The results revealed that the level of environmental disclosure in Malaysian public listed companies is low. And the industry type is the most significant variable that influences the level of environmental disclosure, and there is a significant relationship between the existence of an independent non-executive chairman, the chairperson's age, existence of a CEO with a law background and the industry type with the extent of environmental disclosure. |
| Yusoff and Othman (2013) | Malaysia and Australia | Stand-alone reports (environmental reports, social and Sustainability reports), corporate websites, and corporate newsletters. | Environmental reporting | | Type of industry, ISO 14001 certification, earnings, earnings per share, return on assets, return on equity, net profit margin | 100 companies Malaysia and Australia (the top 50 Malaysian companies listed under Bursa Malaysia and the top 50 Australian companies listed on the Australian Stock | Environmental reporting in stand-alone reports (environmental reports, social and sustainability reports), corporate websites, and corporate newsletters is predominantly general and qualitative in nature. The study also revealed that environmental disclosure practice in Australia is influenced by the accreditation of ISO certification and the type of industry while the disclosure practice in Malaysia is only influenced by the accreditation of ISO certification. |

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| | | | | | | Exchange), using content analysis | |
| Darus <i>et al.</i> (2014) | Malaysia | Annual report and sustainability report | Extent of reporting | CSR | Concentrated shareholders, customer influence, government shareholdings, organizational slack, foreign exposure, size | 76 financial institutions in Malaysia over a four-year period from 2008 – 2011, using content analysis | Extent of CSR reporting is significantly and negatively associated with concentrated shareholdings and positively associated with customer. While government shareholdings, organizational slack, foreign exposure and size variables show insignificant relationships. |
| Mughal (2014) | Pakistan | | CSR disclosure practice | | | 3 companies from petroleum industry (refineries) of Pakistan, using open ended interviews | The study highlighted that petroleum companies in Pakistan are contributing positively towards CSR, more conscious towards portraying their image and they have understood the importance of disclosing environmental information other than financial information. |
| Chithambo and Taurigana (2014) | UK | Annual reports, sustainability reports and web sites | The extent of greenhouse gas (GHG) disclosures | | Size, gearing, profitability, liquidity, financial slack, capital expenditure, firm age and industry | 210 companies, using content analysis | The study indicated that the extent of voluntary GHG disclosure of the sample companies is still low. The study also indicated that company size, gearing, financial slack and two industries (consumer services and industrials) are significantly associated with GHG disclosure while profitability, liquidity and capital expenditure are not. |
| Giannarakis (2014) | US | Scoring of Bloomberg online database | The extent of disclosure | CSR | Corporate governance and financial characteristics, namely, Chief executive officer (CEO) duality, women on board, board's age, board meetings of directors, board size, company's size, profitability, industry's profile and financial leverage | 366 companies from the Fortune 500 list for 2011, Bloomberg online database (scoring) | The results revealed that firm size and board size are significantly and positively associated with the extent of CSR disclosure, and companies with chief executive officer duality disclose less CSR information, while there extent of CSR disclosure varies from industry to industry. |

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| Hassan (2014) | UK | Annual reports and stand-alone CSR reports | The quantity and quality of CSD | Multi-nationality, corporate governance mechanisms (board size, board composition, presence of a corporate responsibility committee) and corporate ownership (block ownership) | 317 companies in 2005 and 327 companies in 2006, using content analysis | The empirical results show that governance mechanisms are associated with both the quantity and quality of social disclosure while the degree of multi-national activities appears not to be related to the level of CSD. |
| He and Loftus (2014) | China | Annual reports and stand-alone CSR reports | The level and nature of environmental disclosure | Environmental performance, size, profitability leverage, media coverage, information asymmetry, foreign ownership, state ownership | The largest 100 companies listed on the Shanghai Stock Exchange, using content analysis | The study revealed that, the level of disclosure is low and lag behind that of companies in developed countries. The study also revealed that companies with more favourable environmental performance provide a higher level of environmental disclosure and include a greater proportion of hard disclosure items. In addition, the study showed that there is a significant and positive relation between firm size and CED, while, none of the other variables is significantly associated with CED. |
| Joseph <i>et al.</i> (2014) | Malaysia | Websites | Total number of the 57 items disclosed | Size, Jurisdiction , Local Agenda (LA) 21, Implementation, Disclosure, Award, Type, City, Municipal, Recycling programme logo, and Internal goals | 139 Malaysian local authorities, using content analysis | The extent of the sustainability disclosure on the corporate websites is in an average level The study also indicated that size, Local Agenda (LA) 21 and public sector award are significant predictors of the extent of sustainability reporting on websites. |
| Kansal <i>et al.</i> (2014) | India | Annual reports | The level of CSR disclosure | Company size, profitability, leverage, industry, age, and corporate reputation | The top 100 companies in the Bombay Stock Exchange | The study's results indicated that overall disclosures are low. The results also revealed that corporate size, profitability, industry type and corporate reputation are significant factors that influence the social disclosure of Indian companies. |

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| Lu and China Abeysekera (2014) | Annual reports and corporate social responsibility reports | Environmental disclosure practices | Stakeholders' power (government shareholder creditor independent corporate characteristics size, performance, membership, overseas listing) | power, power, power, auditor), (firm financial industry overseas listing) | 100 firms in the 2008 Chinese Stock-listed Firms' Social Responsibility Ranking List. Using content analysis. | Findings indicated that corporate social and environmental disclosures have significant and positive associations with firm size, profitability, and industry classification. The roles of various powerful stakeholders in influencing corporate social and environmental disclosures are found to be generally weak in China, except that shareholders have influenced corporate social and environmental disclosures and creditors have influenced corporate disclosures related to firms' environmental performance. |
| Muttakin and Bangladesh Khan (2014) | Annual reports | The extent of CSR disclosure | Leverage, firm age, industry type | | All 135 manufacture companies listed with the Dhaka Stock Exchange (DSE) in Bangladesh from 2005 to 2009, using content analysis | The study revealed that CSR disclosure has positive and significant relationships with export oriented sector, firm size and types of industries, and a negative relationship between CSR disclosure and family ownership. |
| Sulaiman <i>et al.</i> Malaysia (2014) | Annual reports | Quality environment disclosure | of Share ownership al distribution, firm size and leverage | | 164 Malaysian companies, using content analysis | The findings revealed a significant positive association between firm size and leverage with the quality of environmental reporting, while share ownership distribution and profitability had no significant relationship with the quality of environmental reporting. |
| Yusoff and Malaysia Darus (2014) | Annual reports And sustainability reports | Environmental disclosure practice | | | 37 Islamic financial institutions established in Malaysia, using content analysis | Study results revealed that environmental disclosures made by the IFIs were brief, descriptive and qualitative in nature. The results also indicated that the key environmental disclosures provided were related to climate change mitigation and adaptation, and prevention of pollution type of activities. Further exploration on the prioritization of environmental activities found that the key focus of the vital activities was prevention related programmes. |

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| Ahmad and Hossain (2015) | Malaysia | Annual reports | The disclosure of climate change and global warming | | 79 Malaysian companies, using content analysis | The study concluded that this kind of disclosure in the annual reports of Malaysian companies is still at its introductory stage. |
| Comyns and Figge (2015) | Global | Sustainability reports | The evolution of greenhouse gas reporting quality | | 45 oil and gas companies listed on the 2011 Global Fortune 500 index, for the period of 1998-2010, using content analysis | This study revealed that, in total, 80 per cent of 245 reports contained quantitative and qualitative data on GHG emissions while the remaining 20 per cent contained only qualitative data. The study also revealed that GHG reporting quality has not improved significantly between 1998 and 2010, and the type of information is important in terms of quality evolution. |
| Esa <i>et al.</i> (2015) | Malaysia | Annual reports | The level of CSR disclosure | Company characteristics (company size, profitability, leverage and industry type) ownership structure (ownership concentration, foreign ownership, government ownership and family ownership) and board structure (board size, board independence, board qualification and family members on board) | Malaysian top 100 companies, using content analysis | The results revealed that company size, profitability, board size, independent non-executive directors on the board were found to be significantly and positively associated with the level of CSR disclosure. While, ratio of family members on the board was found to be negatively associated with the level of CSR disclosure. However the study revealed that the associations between the level of CSR disclosure and each of leverage, industry type, ownership concentration, foreign ownership, government ownership, and board qualification are not significant. |
| Lipunga (2015) | Malawi | Annual reports | The level of CSR disclosure | | 14 companies listed on the Malawi Stock Exchange in 2012 and 2013, using content analysis. | The study indicated that the level of CSR disclosure that the companies were making in their annual reports is generally low. Particularly, the companies disclosed poorly on environment category. |

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| Michelon <i>et al.</i> (2015) | UK | Stand-alone reports and annual reports | CSR reporting practices | Providing a stand-alone CSR report, assurance statement, self-declaration of adherence to the GRI guidelines. | 112 companies listed on the London Stock Exchange for the years 2005–2007. | Companies do not provide a high quality of CSR information. Issuers of stand-alone reports are likely to provide more disclosure than firms releasing CSR information in the annual report but not a greater quality of disclosure. |
| Vilar and Simao (2015) | 11 geographic regions of the world | Corporate websites | CSR disclosure | | 110 banks (the ten major banks in each 11 regions) using content analysis | The study revealed that the banks disclose on their websites on environmental performance, socioeconomic programs and other CSR information. The study also revealed that there are geographic patterns in the quantity and detail of the disclosures. The banks belong to Europe, the American continent, and Oceania, were disclosed more information. The study concluded that the disclosure of CSR by the banks is larger and more detailed according to the development level of the country where they operate. |
| Dong <i>et al.</i> (2015) | The Netherlands | CSR reports | CSR quality disclosure | CSR performance, external financing needs, corporate governance, financial disclosure quality, firm size, market-to-book ratio, firm leverage, profitability (ROA), fundamental volatility (standard deviation of ROA in five years), and fixed effects for industry and year | 491 firm-year observations for 61 unique firms between 2004 and 2012. | They concluded that larger firms, firms with better CSR performance, greater external financing needs, and stronger corporate governance tend to provide higher quality CSR disclosures. |

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| Das <i>et al.</i> (2015) | Bangladesh | Annual reports | CSR disclosures. | Corporate governance (ownership structure, board size, board duality, and independent director) and company specific characteristics (firm size, firms' profitability and age) | 30 Bangladeshi listed Bank, using content analysis | The results revealed that, to varying degrees, all listed banks' practices social responsibility in an unstructured manner. The results also revealed that CSR disclosure is positively significant with firm size, board size, ownership structure, and independent non-executive director in the board, while it is negatively associated with firms' profitability and the age of the company. On the other hand, there is an insignificant relationship between CSR disclosure and board leadership structure. |
| Eljayash (2015) | Egypt, Libya and Tunisia. | Annual reports | Environmental disclosure | | 23 oil and gas companies for the years 2008, 2009 and 2010, using content analysis | The results of the study indicated low level and quality of environmental information disclosed in the annual reports before Arab spring. |
| Kaur (2015) | India | Annual reports, web sites, director's report, environmental or sustainability report | Environmental disclosure | | 99 India listed companies, using content analysis | The study revealed insignificant differences among the environmental disclosure categories |
| Nurhayati <i>et al.</i> (2015) | India | Annual reports | The extent of social and environmental disclosure | Firm size, international brand, independence and ownership concentration, and control for audit committee independence, CEO duality, profitability, international certification obtained | Indian textile listed firms for the 2010, 2011, and 2012, 100 textile firms for each year, using content analysis | The results revealed that the extent of social and environmental disclosure in annual reports of Indian textile companies is low. The results also revealed that firm size, international brand, audit committee independence, CEO duality, profitability, international certification obtained and year of reporting are statistically significant factors in explaining the variation of social and environmental disclosure. |

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| Innocent <i>et al.</i> (2015) | Nigeria | Triple Bottom Line reports | The effectiveness of triple bottom line disclosure practices | | | 200 respondent, using questionnaire | The findings indicated that investors, consumers and chartered accountants are dissatisfied with the extent of firms TBL disclosure practice in Nigeria, and the firms' reporting was often vague and far from the expression of actual performance. |
| Dibia and Onwuchekwa (2015) | Nigeria | Annual reports | Environmental disclosure | Firm size, profitability, leverage and audit firm type | | 15 oil and gas companies from Nigeria, using content analysis | The findings showed that there is a significant and positive relationship between firm size and corporate environmental disclosure, while, the relationship between profitability, leverage, audit firm type and corporate environmental disclosure is insignificant. |
| Hewaidy (2016) | Kuwait | Annual reports | Corporate social and environmental disclosure | | | 43 companies listed in Kuwait Stock Exchange (KSE), using content analysis | The results revealed that the overall disclosure level for the sample companies is 21%. The disclosure level varies by disclosure category. |
| Nurhayati <i>et al.</i> (2016) | India | Annual reports | Social environmental disclosure | and Corporate size, brand development, audit committee size, board independence and level of ownership | | 100 Indian textile and apparel firms listed on the Bombay Stock Exchange, using content analysis | The results indicated a low extent of social and environmental reporting by the sample firms, with a mean disclosure of 14%, while firms reported relatively more extensive environmental information, with a mean disclosure of 18.4%. The results revealed that corporate size, brand development and audit committee size are significant factors determining the extent of social and environmental reporting, while board independence and level of ownership are not. |
| Weber <i>et al.</i> (2016). | International | Annual reports | Carbon disclosure | Government, public, employees, and customers | general media, and | 1,120 international firms, using | The results confirmed that the stakeholder groups of government, general public, media, employees, and customers are associated with carbon disclosure. |

APPENDIX 2

List of Sample Companies

| No. | Company Name | Country of Origin |
|-----|---|-------------------|
| 1. | Petrobras Argentina SA | Argentina |
| 2. | Repsol YPF, S.A., | Argentina |
| 3. | Transportadora de Gas del Sur | Argentina |
| 4. | Yacimientos Petrolíferos Fiscales(YPF) | Argentina |
| 5. | Comgas | Brazil |
| 6. | OGX | Brazil |
| 7. | Petrobras | Brazil |
| 8. | Queiroz Galvao | Brazil |
| 9. | Transpetro | Brazil |
| 10. | Towngas China Company Limited | China |
| 11. | China Blue Chemical Ltd. | China |
| 12. | China Resources Gas Group Limited | China |
| 13. | China National Offshore Oil Corporation (CNOOC) | China |
| 14. | China Natural Gas | China |
| 15. | Shanghai Petrochemical Company Limited | China |
| 16. | Sinopec | China |
| 17. | Sinopec Yizheng Chemical Fibre Company Limited | China |
| 18. | CITIC Resources Holdings Limited | China |
| 19. | PetroChina | China |
| 20. | China National Petroleum Corporation (CNPC) | China |
| 21. | Colombian Petroleum Company (Ecopetrol) | Colombia |
| 22. | Pacific Rubiales Energy | Colombia |
| 23. | Gran Tierra Energy | Colombia |
| 24. | AMOC | Egypt, Arab Rep. |
| 25. | Agiba Petroleum Company | Egypt, Arab Rep. |
| 26. | Egyptian Natural Gas Holding Company (EGAS) | Egypt, Arab Rep. |
| 27. | Egyptian Natural Gas Company (GASCO) | Egypt, Arab Rep. |
| 28. | TAQA Arabia | Egypt, Arab Rep. |
| 29. | BG Egypt | Egypt, Arab Rep. |
| 30. | Sidpec | Egypt, Arab Rep. |
| 31. | Bharat Petroleum Corporation Limited (BPCL) | India |
| 32. | Castrol India Limited | India |
| 33. | Chennai Petroleum Corporation Limited (CPCL) | India |
| 34. | Essar Oil Limited | India |
| 35. | Gail | India |
| 36. | Gujarat Gas | India |

| No. | Company Name | Country of Origin |
|-----|---|-------------------|
| 37. | Gujarat State Petroleum Corporation | India |
| 38. | Hindustan Petroleum | India |
| 39. | Indian Oil Corporation | India |
| 40. | Indraprastha Gas Limited (IGL) | India |
| 41. | Mangalore Refinery and Petrochemicals Limited | India |
| 42. | Oil India Limited | India |
| 43. | Oil and Natural Gas Corporation | India |
| 44. | Petronet LNG | India |
| 45. | Reliance Power Limited | India |
| 46. | Reliance Industries Limited | India |
| 47. | Bumi Resources | Indonesia |
| 48. | Lapindo Brantas Inc. | Indonesia |
| 49. | MedcoEnergi | Indonesia |
| 50. | Pertamina | Indonesia |
| 51. | Perusahaan Gas Negara | Indonesia |
| 52. | Anadarko | Kazakhstan |
| 53. | KazMunayGas | Kazakhstan |
| 54. | KazMunaiGas Exploration Production (AO) | Kazakhstan |
| 55. | KazTransOil | Kazakhstan |
| 56. | Tengizchevroil | Kazakhstan |
| 57. | Kenya Petroleum Refineries Limited | Kenya |
| 58. | National Oil Corporation of Kenya | Kenya |
| 59. | KenolKobil | Kenya |
| 60. | Gapco Kenya Limited | Kenya |
| 61. | Ikarus | Kuwait |
| 62. | Kuwait Foreign Petroleum Exploration Company (KUFPEC) | Kuwait |
| 63. | Kuwait National Petroleum Company (KNPC) | Kuwait |
| 64. | Kuwait Oil Company (KOC) | Kuwait |
| 65. | Oula Fuel Marketing Company K.S.C | Kuwait |
| 66. | Forte Oil Plc | Nigeria |
| 67. | Conoil PLC. | Nigeria |
| 68. | Nigeria LNG | Nigeria |
| 69. | Oando PLC | Nigeria |
| 70. | Transnational Corporation of Nigeria | Nigeria |
| 71. | ASCON OIL | Nigeria |
| 72. | South Atlantic Petroleum | Nigeria |
| 73. | Oman LNG | Oman |
| 74. | Oman Oil Company (OOC) | Oman |

| No. | Company Name | Country of Origin |
|------|---|---------------------|
| 75. | Oman Oil Marketing Company | Oman |
| 76. | Petroleum Development of Oman | Oman |
| 77. | Attock Petroleum Limited | Pakistan |
| 78. | Attock Refinery Limited (ARL) | Pakistan |
| 79. | Mari Gas Company | Pakistan |
| 80. | Oil and Gas Development Company | Pakistan |
| 81. | Pakistan Petroleum Limited | Pakistan |
| 82. | Pakistan Refinery Limited | Pakistan |
| 83. | Pakistan State Oil | Pakistan |
| 84. | Shell Pakistan | Pakistan |
| 85. | Sui Southern Gas Company (SSGC) | Pakistan |
| 86. | Qatar Petroleum (QP) | Qatar |
| 87. | Qatargas | Qatar |
| 88. | Qatar Petrochemical Company Ltd. (QAPCO) | Qatar |
| 89. | RasGas Company Limited | Qatar |
| 90. | GS Caltex | Republic of Korea |
| 91. | Korea National Oil Corporation (KNOC) | Republic of Korea |
| 92. | S-Oil Corporation | Republic of Korea |
| 93. | SK Group | Republic of Korea |
| 94. | National Gas & Industrial Co. (GASCO) | Saudi Arabia |
| 95. | Petro Rabigh | Saudi Arabia |
| 96. | Petrochem | Saudi Arabia |
| 97. | Sahara Petrochemical Company | Saudi Arabia |
| 98. | National Industrialization Company (Tasnee) | Saudi Arabia |
| 99. | Saudi Arabia Refineries Co | Saudi Arabia |
| 100. | PTT Public Company Limited | Thailand |
| 101. | PTT Exploration and Production PCL | Thailand |
| 102. | Bangchak Petroleum PCL | Thailand |
| 103. | Thai Oil PCL | Thailand |
| 104. | Atlantic LNG | Trinidad and Tobago |
| 105. | National Gas Company of Trinidad and Tobago Limited | Trinidad and Tobago |
| 106. | Trinidad & Tobago National Petroleum Marketing Company Limited (NP) | Trinidad and Tobago |
| 107. | Petroleum Company of Trinidad and Tobago Limited (Petrotrin) | Trinidad and Tobago |
| 108. | Aygaz | Turkey |
| 109. | BOTAŞ | Turkey |
| 110. | Bosphorus Gaz Corporation | Turkey |
| 111. | Çalık Enerji | Turkey |
| 112. | OPET Petrolcülük A.S. | Turkey |

| No. | Company Name | Country of Origin |
|------|--|-------------------|
| 113. | Petrol Ofisi | Turkey |
| 114. | Turkiye Petrol Rafinerileri A.Ş. (Tupras) | Turkey |
| 115. | Turkish Petroleum Corporation | Turkey |
| 116. | Turkish Petroleum International Company (TPIC) | Turkey |



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APPENDIX 3 Environmental Disclosure Index

| No | Environmental Themes | Description |
|-------------------------------|---|---|
| 1 Economic Factors | | |
| 1.1 | Past and current environmental capital expenditures | Expenditure for environmental protection includes pollution control, equipment and facilities, environmental technology design and environmental research and development expenditures. Environmental cost on remediation/ decommissioning and environmental restoration operations (eliminating soil and groundwater contamination, environmental compensation, etc.). |
| 1.2 | Past and current environmental operating costs | Operating expenses of environmental protection, includes operating expenses of pollution control equipment and facilities and other expenses of environmental protection with respect to noise, air, water, land, and visual quality. Costs of environmental restoration operations (for example, eliminating soil and groundwater contamination, environmental compensation, etc.) environmental tax, normal routine pollutant discharge fees. |
| 1.3 | Future environmental capital expenditures | Estimated expenditures for environmental protection, includes pollution control, equipment, facilities and research & development expenditures, expenditures for the decommissioning, removal and site cleaning, estimated dismantlement costs for site restoration, estimated expenditures for installation of effluent treatment plant, eco-friendly facilities |
| 1.4 | Future environmental operating costs | Estimated operating costs for environmental protection, includes pollution control, equipment and facilities and other expenses of environmental protection with respect to noise, air, water, land and visual quality |
| 1.5 | Environmental liabilities and provisions | Estimated Liability for Restoration and Rehabilitation. For example, environmental risk and contingent provision, Provisions for environmental charge, Provision for decommissioning, removal and site cleaning, any environmental liabilities (actual and potential). |
| 2 Laws and Regulations | | |
| 2.1 | Litigation (present and Potential) | A statement about the company's involvement, possible involvement, or lack of involvement in legal proceedings for actions involving the environment. Includes contingent liabilities, future costs, and fines. |
| 2.2 | Fines and Penalties | Monetary value of significant fines and penalties and total number of non-monetary sanctions for noncompliance with environmental laws and regulations. Any referencing to fines or penalties imposed by the laws and regulations upon violation of environmental regulations and standards. Referencing to administrative punishments regarding of breaking environmental instructions. |

| No | Environmental Themes | Description |
|---|--|--|
| 2.3 | Environmental legislations and regulations requirements | Discussion of environmental-related requirements of laws and regulations , for example, environmental law, clean air act, clean water act, oil & gas statutes and regulations, petroleum law , contracts, industry's codes and standards , environmental index used for the industry that the company's operations are subject to. Statement of compliance and non-compliance with environmental-related laws, regulations, standards and other related requirements. Future legislative/regulative requirements and ability to meet future legislative/regulative requirements. Any referencing to requirements and instructions to deal with any environmental incidents. Referencing to remedial corrective actions required by laws and regulations to treat environmental damages. Discussion of status of facilities and equipment of the company and their compliance with related laws and standards. |
| 3 Pollution abatement / Emission and discharge information | | |
| 3.1 | Air emission information | Air emission and discharge information such as, Hydrocarbon emissions, VOCs, Flaring (including, flared gas), Reinjection of associated gas, Venting, greenhouse gas (GHG) emissions, CO ₂ , CH ₄ , SO ₂ , NO ₂ , CO, CFCs, and other significant air emissions. |
| 3.2 | Water discharge information | Releases to water such as, Hydrocarbon releases, Oil discharged to water, Oil in mud and cuttings, Oil spills, BOD, COD, Phenols particulates, Ammonia, Sulphides, Phosphorus, Nitrogen metals produced water, Oil content of produced water, Chemical content of produced water, Special releases, Total releases. |
| 3.3 | Waste disposal information | Solid waste, chemical waste, mud, sludge, drilling & Cuttings, fluids-mixtures of water, clay, barite, and other additives used in drilling wells, produced water (water pumped to the surface during the oil extraction process and then separated from oil and gas), others associated wastes-other wastes uniquely associated with drilling and production operations, such as crude oil tank bottoms (e.g., oil, sediment, and water), disposal method. |
| 3.4 | Noise, odours and visual quality | Instances where standards are exceeded, number of complaints, efforts at reducing noise, odors disturbances to land, and improvement visual quality. |
| 3.5 | Activities, products and services impacts on environment | Corporate context (profile of company's operations including location and size of land owned, leased, managed in, or adjacent to) and discussion of operation's impacts on the environment (living and non-living natural systems, including ecosystems, land, air, and water), estimate the company's contribution to acidity, global warming, hazardous emissions to air, ozone depletion, photochemical ozone creation, aquatic oxygen demand and aquatic eco-toxicity, strategies, current actions, and future plans for managing impacts on environment. Discussion of environmental attributes of products, information about products and services impacts, for example, impacts of dealing with and use biodiversity and product, information whether the products applicable safety standards, significant environmental impacts of transporting products and other goods and materials used for the organization's operations, initiatives to mitigate environmental impacts of products and services.. |

| No | Environmental Themes | Description |
|-----|--|---|
| 3.6 | Installation of environmental control systems, facilities or processes described | Any environmental information including environmental actions taken either in input or process stages. For example, environmental control measures, installation of environmental control systems, acquisition of special plant or equipment, injection wells, optimization of energy and water systems. |
| | 4 Sustainable development | |
| 4.1 | Conservation of natural resources | Energy management and company's energy policies, energy saving, raw materials use, non-renewable resources used, renewable resources use, energy efficiency, fresh water consumption, alternative energy. Eco-efficiency, associated gas recovery, use clean energy (e.g. sulfur-free fuel gas), utilization of new and renewable energy. |
| 4.2 | Recycling | Recycling and reuse of materials used and wastes, i.e. referencing to materials used that are recycled input materials, for example, water recycled and reused. |
| 4.3 | Progress toward sustainability. | For example, discuss climate change and greenhouse gas emissions, strategies for achieving goals of zero emissions or waste, plans to grow through lower impact activities, movement away from oil into natural gas or renewable resources, investment in gas-to-liquid technologies, plans to produce alternative fuels for the next generation of vehicles, plans to divest into renewable energy options, and attempt to connect environmental and economic dimensions. |
| 4.4 | Research and development activities for sustainable development | Research and development efforts aimed at improving energy efficiency, and reduce pollution abatement, new clean energy production, and the research & development of new energy by the technological innovation. |
| | 5 Disturbances to land and land remediation and contamination | |
| 5.1 | Sites | Description of sites and specific clean-up terms and conditions, site restoration (restoring land to its natural state). |
| 5.2 | Disturbances to land | Data on impacts to land, such as clearing land, building roads and pipelines, digging wells, seismic operations and so forth. Actions to minimize and prevent disturbances to land by, for example, using low-impact operating procedures such as horizontal drilling. The best practices technologies and procedures a company plans to use for its exploration projects. Quantitative measure of land use impacts. (e.g. extent of `rehabilitated, newly disturbed, and still to be rehabilitated land. |
| 5.3 | Efforts of remediation/ Rehabilitation (present and future) | Decommissioning/dismantling and removing of property, plant and equipment. Restoring site and contaminating of land, number of suspended wells designated for decommissioning, number of inactive / redundant wells, plugged wells & abandoned wells. Land reclamation and forestation programmes. |

| No | Environmental Themes | Description |
|----------|---|--|
| 6 | Spills & Environmental Incidents | |
| 6.1 | Number and nature of spills and environmental incidents | Number of oil and chemical spills and incidental releases, amount spilled and rate of spillage. Causes of spillage incidents, type of materials spilled (crude oil, gas, others), physical, biological and economic characteristics of the spill location, weather and sea conditions. |
| 6.2 | Efforts to reduce and / or prevent spills | Efforts spent by company to prevent reduce and control the spills and limit environmental consequences of the spill, and effectiveness of clean-up, oil spill response system. |
| 6.3 | Costs of treatment of spills. | Actual and potential costs related to spills, including liabilities towards effected parties. |
| 7 | Environmental management | |
| 7.1 | Environmental policies or company concern for the environment | Statement of industry environmental policy. Company environmental policy statement (Brief, company-wide policy or policies) that defines the company's overall commitment related to the environmental aspects). List of environmental objectives, environmental issues of concern, and prioritization of environmental issues in terms of their impact. |
| 7.2 | Environmental management system (EMS) | Description of company's implementing of environmental management system (EMS) or ISO 14001 including how the company is managed to achieve its environmental objectives and targets (Key strategies and procedures for implementing policies or achieving goals), and waste management and disposal used. |
| 7.3 | Environmental auditing | Environmental audit scope-frequency/sites; environmental audit results; external verification report on the environmental audit; response to environmental audits. Procedures related to monitoring and corrective and preventive actions. Environmental Audit/ Independent Verification Statement |
| 7.4 | Goals and targets | Company-wide goals and targets regarding environment aspects. Environmental performance against targets using performance indicators (such as GRI performance indicators). Actions taken where targets not achieved. |
| 7.5 | Environmental Awards And Recognition | Receiving awards related to environmental protection, programmes or policies. |
| 7.6 | Department/ committee for environmental affairs pollution control | Existing department or committee for environmental affairs (or Sustainability, Corporate Social Responsibility, and Social Welfare Committee). |
| 7.7 | Joint projects with other firms on environmental management | Working with other firms operating in the same industry to develop or improve environmental management standards |
| 7.8 | Involvement to environmental organizations | Relationship to environmental organizations. Participation in elaboration of environmental standards or implantation of environmental initiatives such as Dow Jones Global Sustainability Index, GRI, Global Compact And coordination with environmental protection agencies. |

| No | Environmental Themes | Description |
|----------------------------|---|--|
| 7.9 | Environmental activities and programmes | Designing facilities and products harmonious with the environment (environmentally friendly technology/ products), contributions in terms of cash or art to beautify the environment, restoring of historical buildings and structures, landscaping and Supporting anti-litter campaigns. Environmental activities such as growing trees, campaign/camps about climate change, restoring historical buildings/structures and environmental clean-up activities at surrounding areas of company's operations. |
| 7.10 | Environmental training and education programmes | A statement about the training and educating the company's employees in environmental issues. Procedures related to training and raising awareness in relation to the environmental aspects. A statement about the company's involvement in environmentally related research, studies, or programmes undertaken to improve the environment. |
| 8 Health and Safety | | |
| 8.1 | Employee health and safety policy | Providing reference to promoting employee safety and physical or mental health. Discussion of company's intentions, commitments and targets regarding occupational health and safety programs. Description of HSE management system, emergency situations procedures such as a safety, health, preventing occupational injuries, illness, losses due to incidents. |
| 8.2 | Health and safety laws and regulations | Reference to health and safety related laws, regulations, standards, and providing reference to complying with those laws and standards |
| 8.3 | Health and safety management systems | Description of company's occupational health and safety management systems (OHSAS). |
| 8.4 | Health and safety at work | Information on health of employees (including illness, stress, injury) and discussion on health and safety condition at work environment and efforts to reduce or eliminate of pollutants, irritants, or hazard at the work environment, and fire prevention and firefighting. |
| 8.5 | Toxic hazard (e.g.) to employees and the public | Discussion on impacts of company's operations and transportation of products, goods and materials transportation and using on health of workers, users and public. |
| 8.6 | Health and safety training | Providing reference to conducting research, education and training with the objective of improving work safety |
| 8.7 | Health and safety auditing | Reference to conducting verification, assessment of health and safety status |
| 8.8 | Health and safety incidents and accidents | disclosing incident and accidents statistics including fires, explosions |

a score of 3 = items are disclosed quantitatively;

a score of 2 = items are disclosed in specific terms, but in a qualitative manner;

a score of 1 = items are disclosed in general terms, in a qualitative manner; and

a score of 0 = items are not disclosed.

APPENDIX 4

Coding Instructions

Adapted from: Abd Rahman *et al.* (2011), Aburaya (2012), Hackston and Milne (1996), Hall (2002), Schneider and Samkin (2008) and Silva (2008)

1. For the purposes of content analysis of this study ‘environmental disclosure’ refers to any sentence, phrase, paragraph, table or graph that can be identified as environmental based on the environmental themes described in Appendix 3.
2. Any sentence, phrase, paragraph, table, or graph directly related to part of the company’s business is only to be classified if the information exceeds a description of the facts of business operations.
3. All environmental disclosures must be specifically stated they cannot be implied.
4. Environmental disclosure is to be classified into the environmental themes defined in Appendix 3, based on the meaning of the entire sentence, phrase, paragraph, table, or graph.
5. If a disclosure has more than one possible classification, it should be classified according to the one most emphasized in the sentence
6. If the disclosure of the item is repeated in the same reporting medium or in a different media, it is recorded only once, except in the case where the repeated disclosure contains extra information that enhances the overall quality (or score) of the disclosed item.
7. Each sentence, phrase, paragraph, table, or graph should be coded to the evidence, or specificity present that has the highest quality score. For example, a statement with both monetary and qualitative information should be coded as monetary.
8. If any sentence, phrase, paragraph, table, or graph contains information relating to more than one environmental theme, the sentence, phrase, paragraph, table, or graph should be coded based on the evidence and specificity of each theme present.
9. Any disclosure that is repeated is to be recorded more than once if the evidence or specificity of the disclosure differs from the previous recording. The maximum score for any environmental theme is three.
10. Pictures and their captions are not to be coded. However, if a picture is accompanied by a discussion that goes beyond a caption or a discussion that is unrelated to the picture, that discussion is to be coded.
11. For tables, one line is the equivalent of one sentence
12. Contents pages are not to be coded.

APPENDIX 5 Coding Worksheet

I Company related information

Company name: Country of origin:

Type of company : Total assets:

Independent Co. Consortia/Project-base

Total Outstanding Shares..... Retail sales and/or brand:

Yes No

Percentage of Shares Owned by Foreigners Percentage of Shares Owned by shareholders holding 5% or more of total shares

Percentage of Shares Owned by State Percentage of Shares Owned by Institutions

Leverage (Total liabilities/Total assets): Company had Environmental Certificate

Yes No

Company has Operations and/or sales outside, Company being a member of an industry association/s

Company is being a subsidiary of international co. Yes No

Yes No

II Environmental Disclosure Items and Their Scores

| No | Category | Scores of Annual Report | | | | Scores of Stand-alone Reports | | | | Score of Corporate Homepage | | | | Total Scores |
|--|---|-------------------------|---|---|---|-------------------------------|---|---|---|-----------------------------|---|---|---|--------------|
| | | 0 | 1 | 2 | 3 | 0 | 1 | 2 | 3 | 0 | 1 | 2 | 3 | |
| 1) Economic factors | | | | | | | | | | | | | | |
| 1. | Past and current environmental capital expenditures | | | | | | | | | | | | | |
| 2. | Past and current environmental operating costs | | | | | | | | | | | | | |
| 3. | Future environmental capital expenditures | | | | | | | | | | | | | |
| 4. | Future environmental operating costs | | | | | | | | | | | | | |
| 5. | Environmental liabilities and provisions | | | | | | | | | | | | | |
| 2) Laws and regulations | | | | | | | | | | | | | | |
| 6. | Litigation (present and Potential) | | | | | | | | | | | | | |
| 7. | Fines | | | | | | | | | | | | | |
| 8. | Environmental legislations and regulations requirements | | | | | | | | | | | | | |
| 3) Pollution abatement / emission and discharge information | | | | | | | | | | | | | | |
| 9. | Air emission information | | | | | | | | | | | | | |
| 10. | Water discharge information | | | | | | | | | | | | | |
| 11. | Waste disposal information | | | | | | | | | | | | | |
| 12. | Noise, odours and visual quality | | | | | | | | | | | | | |

APPENDIX 6

Sample of ReCal for Ordinal, Interval, and Ratio-Level Data outputs

ReCal for Ordinal, Interval, and Ratio-Level Data results for file "Call-Reliabilitytest1.csv"

File size: 60 bytes
N coders: 2
N cases: 12
N decisions: 24

Krippendorff's alpha (interval) 0.98

ReCal for Ordinal, Interval, and Ratio-Level Data results for file "Call-Reliabilitytest7.csv"

File size: 60 bytes
N coders: 2
N cases: 12
N decisions: 24

Krippendorff's alpha (interval) 0.797

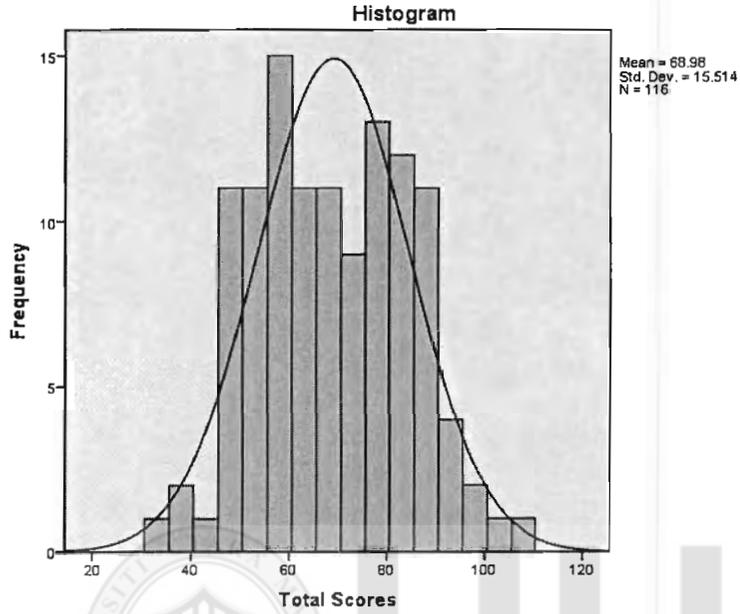
ReCal for Ordinal, Interval, and Ratio-Level Data results for file "Call-Reliabilitytest39.csv"

File size: 60 bytes
N coders: 2
N cases: 12
N decisions: 24

Krippendorff's alpha (interval) 0.743

APPENDIX 7
Graphical Tests of Normality

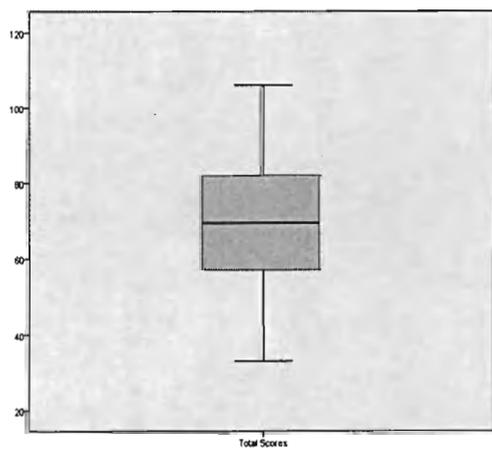
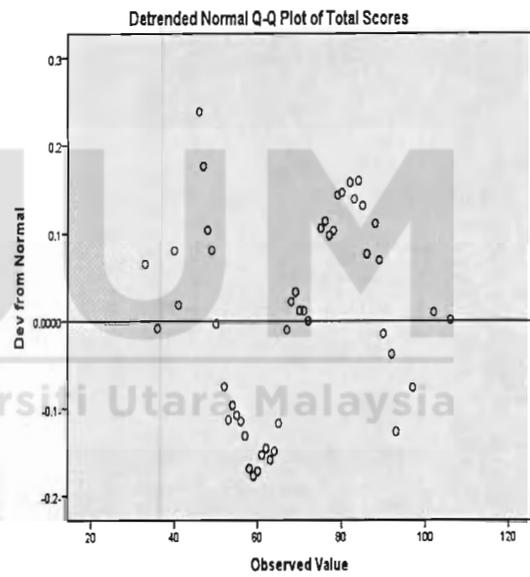
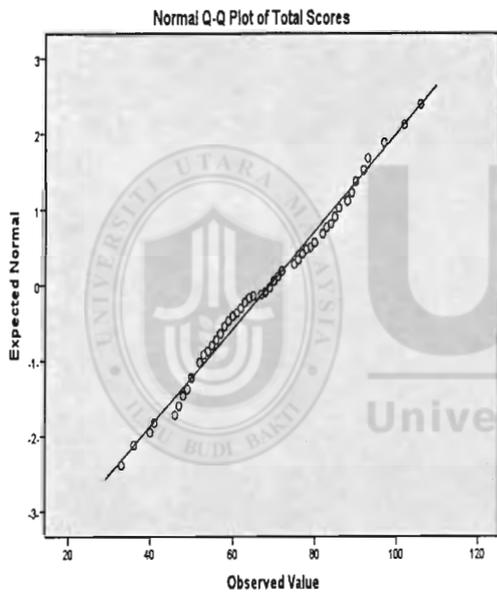
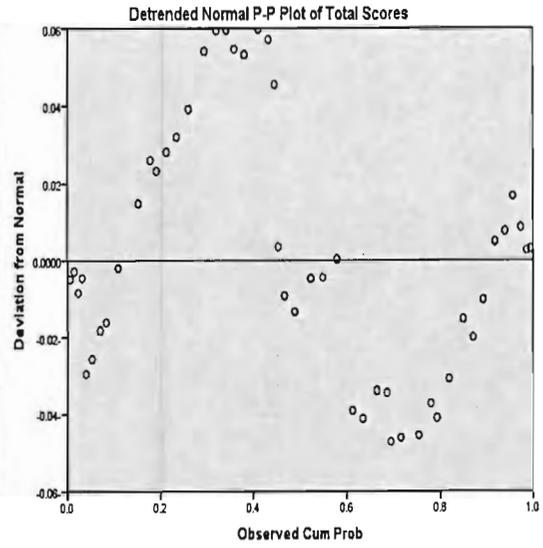
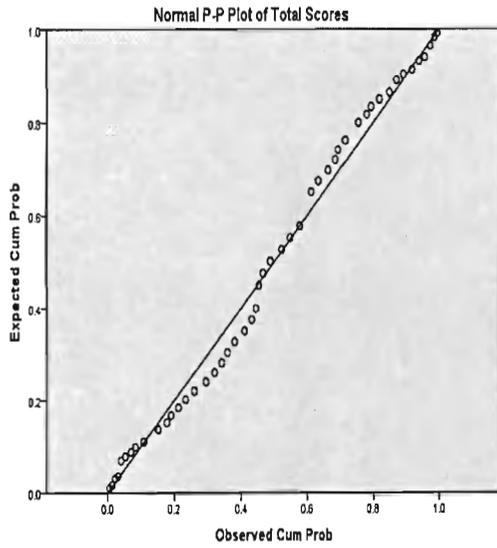
Total Scores

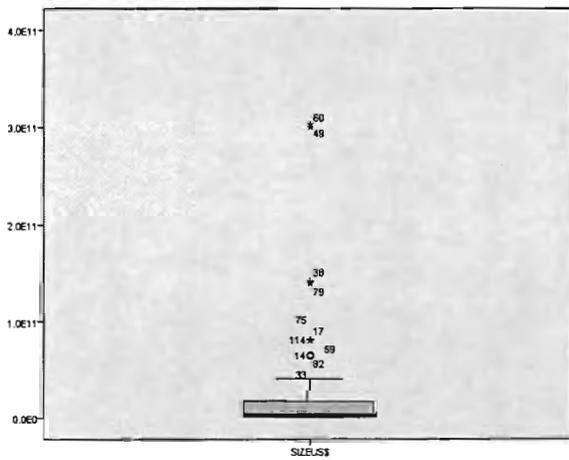
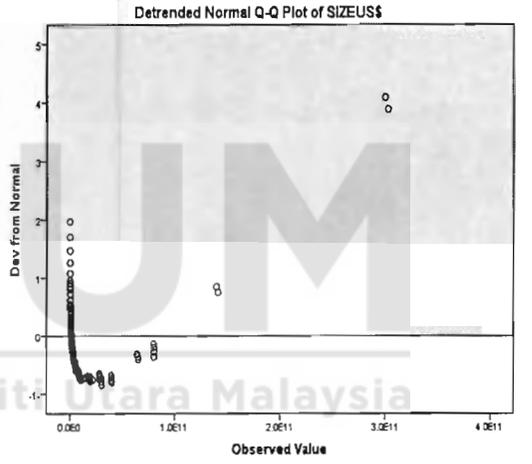
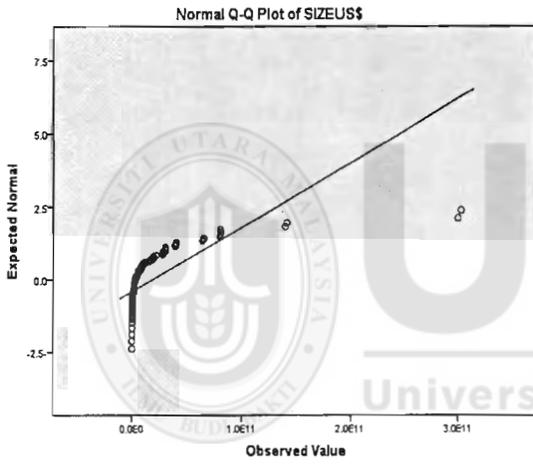
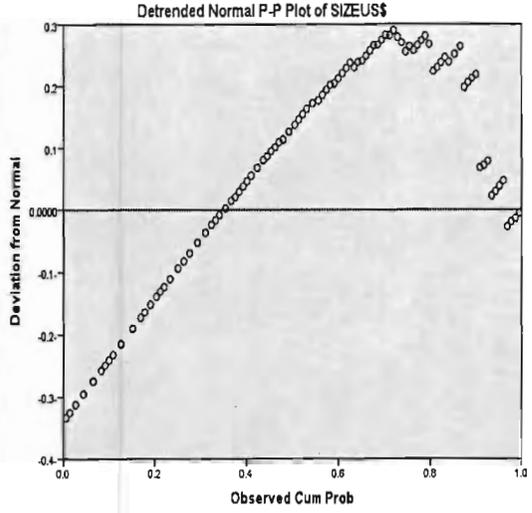
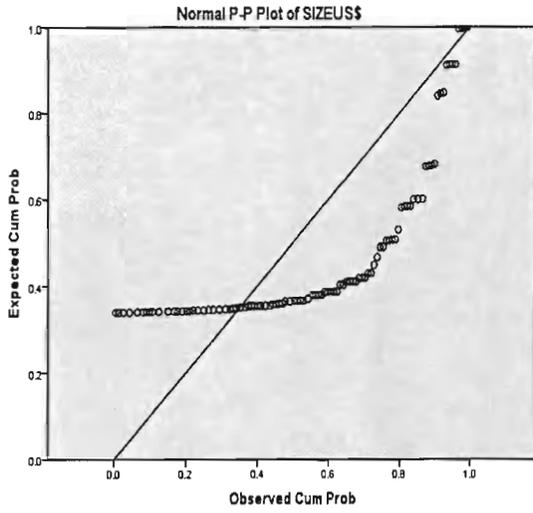


Total Scores Stem-and-Leaf Plot

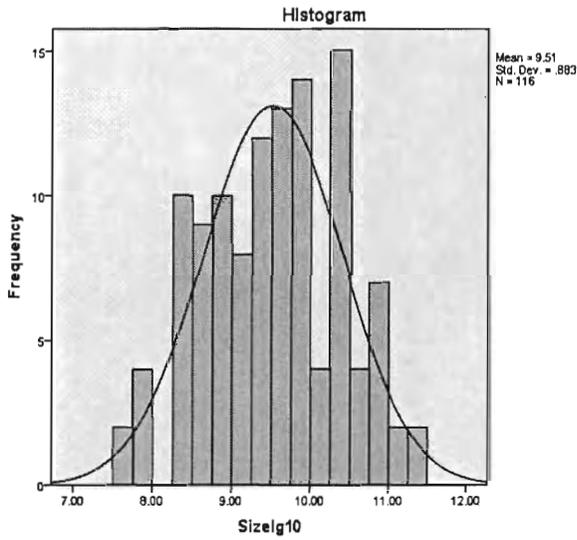
| Frequency | Stem & | Leaf |
|-----------|--------|-----------------|
| 1.00 | 3 . | 3 |
| 1.00 | 3 . | 6 |
| 2.00 | 4 . | 01 |
| 6.00 | 4 . | 677889 |
| 13.00 | 5 . | 000022222344 |
| 15.00 | 5 . | 555667777888899 |
| 13.00 | 6 . | 001222233344 |
| 7.00 | 6 . | 5788999 |
| 12.00 | 7 . | 00001222222 |
| 11.00 | 7 . | 55666777789 |
| 12.00 | 8 . | 00022222344 |
| 12.00 | 8 . | 555566688999 |
| 7.00 | 9 . | 002233 |
| 2.00 | 9 . | 77 |
| 1.00 | 10 . | 2 |
| 1.00 | 10 . | 6 |

Stem width: 10
Each leaf: 1 case(s)





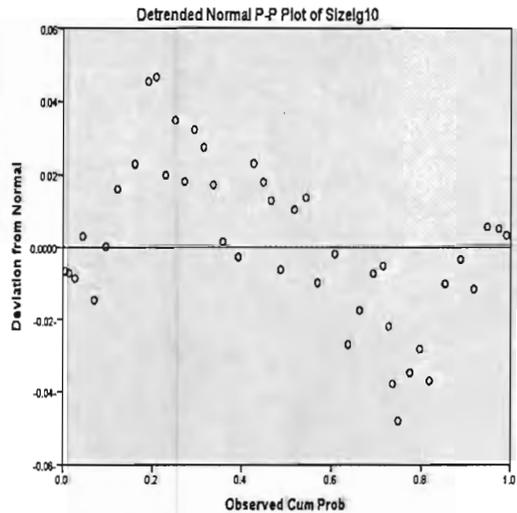
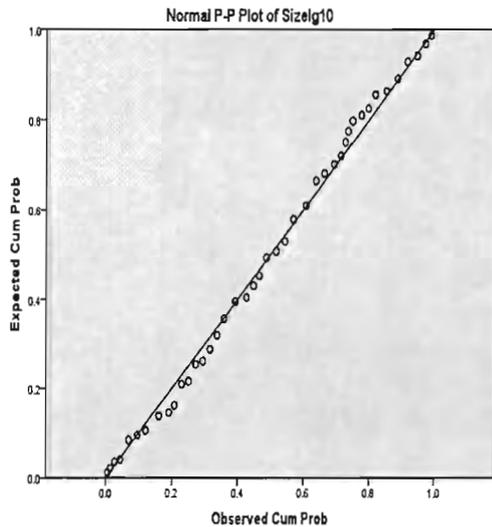
Sizelg10 (Transformed Tata)

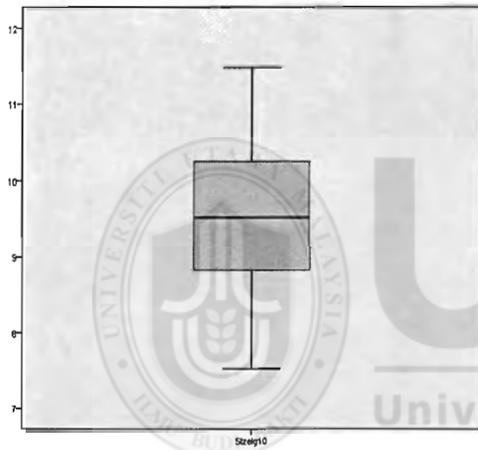
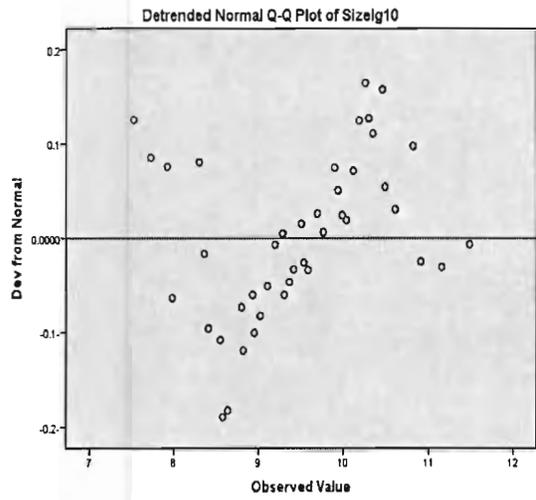
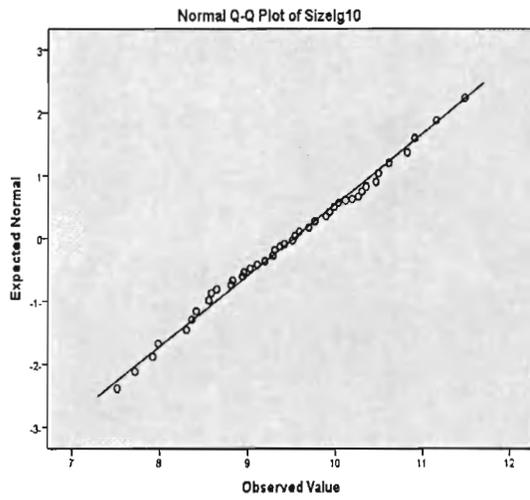


Sizelg10 Stem-and-Leaf Plot

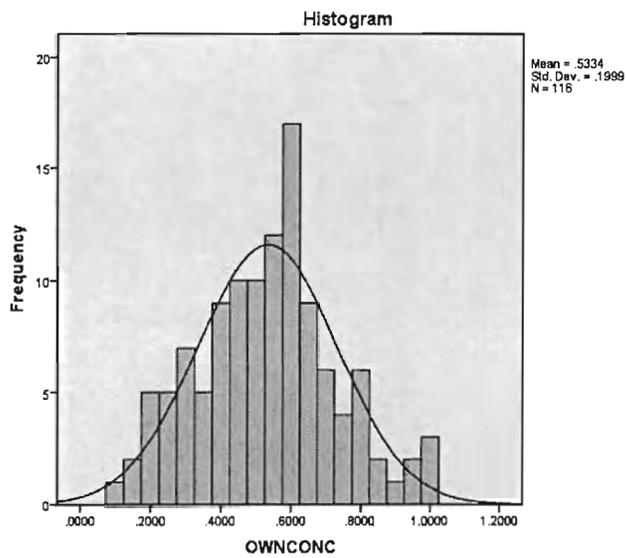
| Frequency | Stem & | Leaf |
|-----------|--------|-------------------------------|
| 6.00 | 7 . | 579999 |
| 10.00 | 8 . | 3333334444 |
| 19.00 | 8 . | 5555555668888899999 |
| 20.00 | 9 . | 000111112222223333344 |
| 27.00 | 9 . | 55555555566666777778899999999 |
| 19.00 | 10 . | 00112222223444444444 |
| 11.00 | 10 . | 66668889999 |
| 4.00 | 11 . | 1144 |

Stem width: 1.00
Each leaf: 1 case(s)





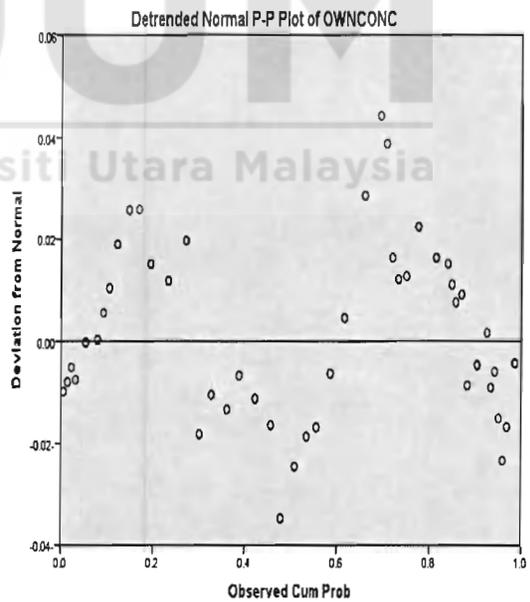
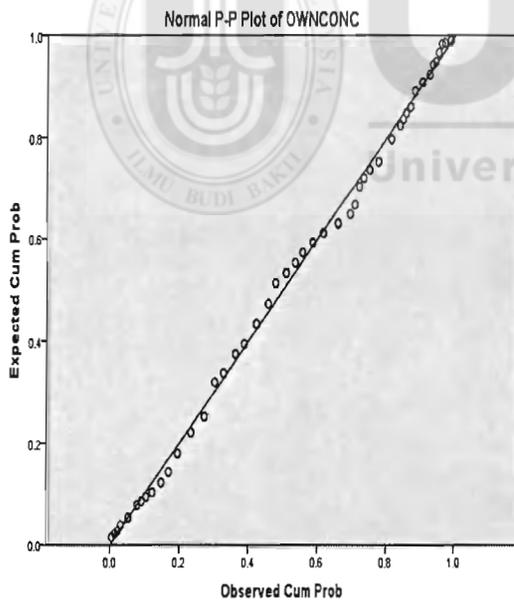
OWNCONC

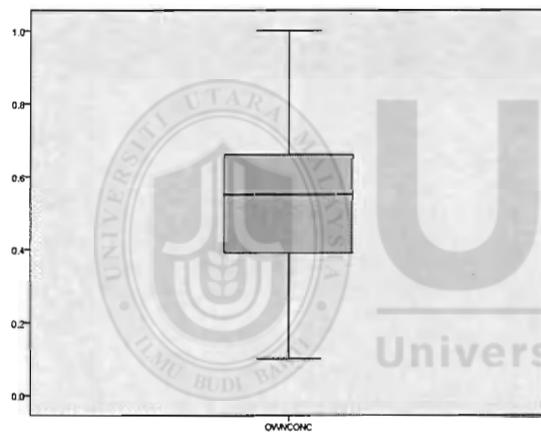
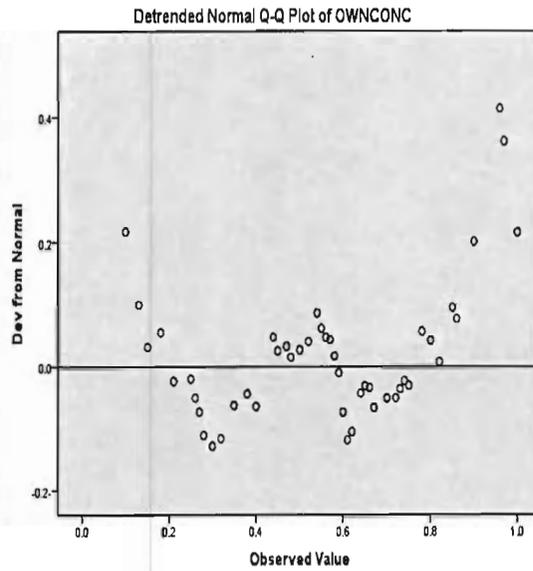
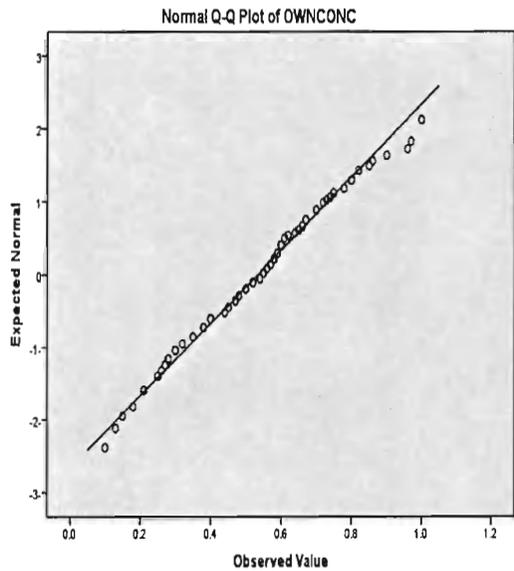


OWNCONC Stem-and-Leaf Plot

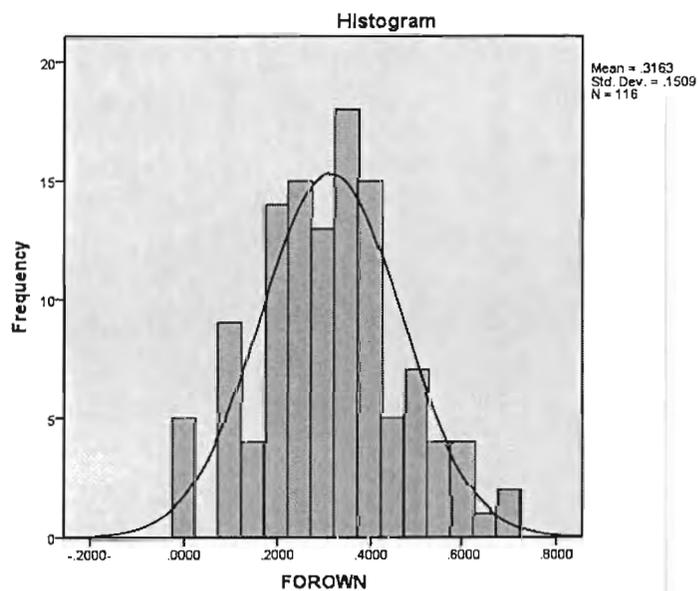
| Frequency | Stem & | Leaf |
|-----------|--------|------------------|
| 2.00 | 1 . | 03 |
| 2.00 | 1 . | 58 |
| 4.00 | 2 . | 1111 |
| 7.00 | 2 . | 5567788 |
| 5.00 | 3 . | 00002 |
| 9.00 | 3 . | 555558888 |
| 7.00 | 4 . | 0000044 |
| 10.00 | 4 . | 5555777788 |
| 11.00 | 5 . | 00000022444 |
| 16.00 | 5 . | 5555667778888999 |
| 11.00 | 6 . | 00000001224 |
| 8.00 | 6 . | 55667777 |
| 8.00 | 7 . | 00000234 |
| 3.00 | 7 . | 558 |
| 5.00 | 8 . | 00002 |
| 2.00 | 8 . | 56 |
| 1.00 | 9 . | 0 |
| 2.00 | 9 . | 67 |
| 3.00 | 10 . | 000 |

Stem width: .1000
 Each leaf: 1 case(s)





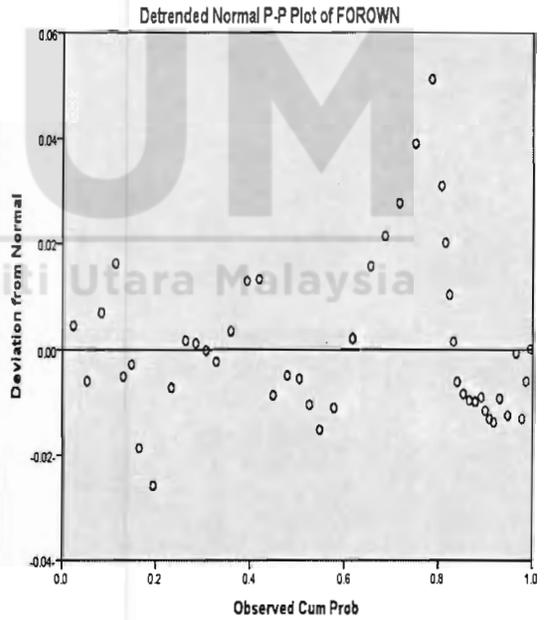
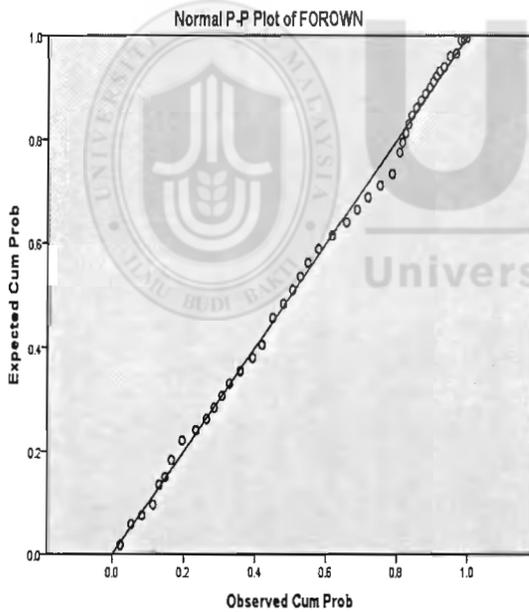
FOROWN

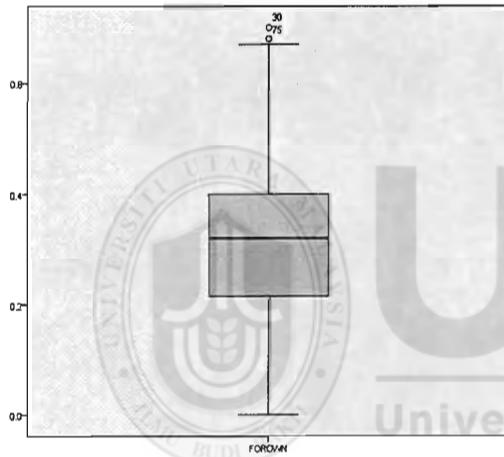
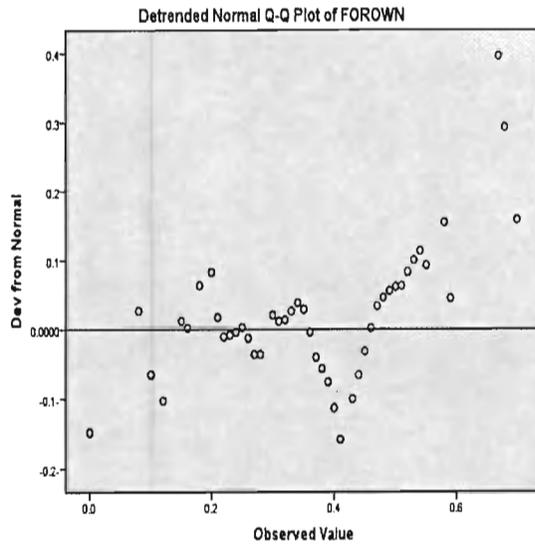
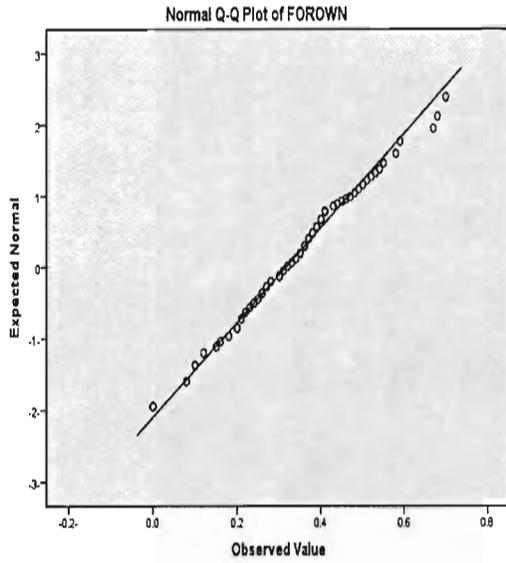


FOROWN Stem-and-Leaf Plot

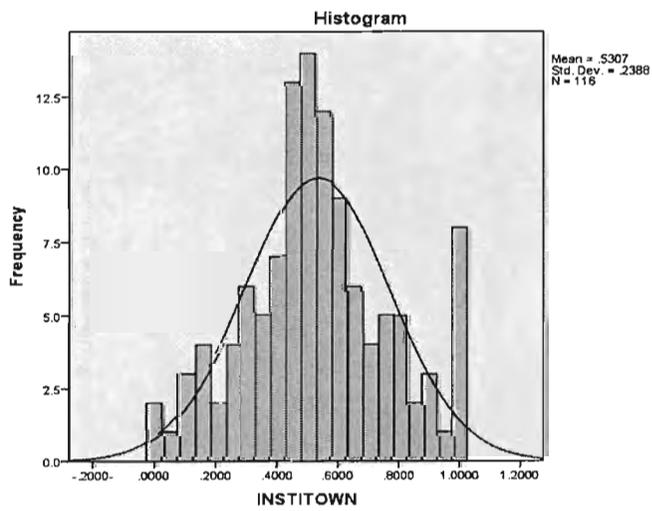
| Frequency | Stem & | Leaf |
|-----------|----------|---------------------|
| 5.00 | 0 . | 00000 |
| 2.00 | 0 . | 88 |
| 7.00 | 1 . | 0000022 |
| 6.00 | 1 . | 556688 |
| 17.00 | 2 . | 00000111122233444 |
| 13.00 | 2 . | 5566666777888 |
| 15.00 | 3 . | 000011122233444 |
| 20.00 | 3 . | 5555666667778889999 |
| 10.00 | 4 . | 0000111134 |
| 6.00 | 4 . | 567889 |
| 6.00 | 5 . | 001234 |
| 6.00 | 5 . | 558899 |
| .00 | 6 . | |
| 1.00 | 6 . | 7 |
| 2.00 | Extremes | (>=.68) |

Stem width: .1000
 Each leaf: 1 case(s)





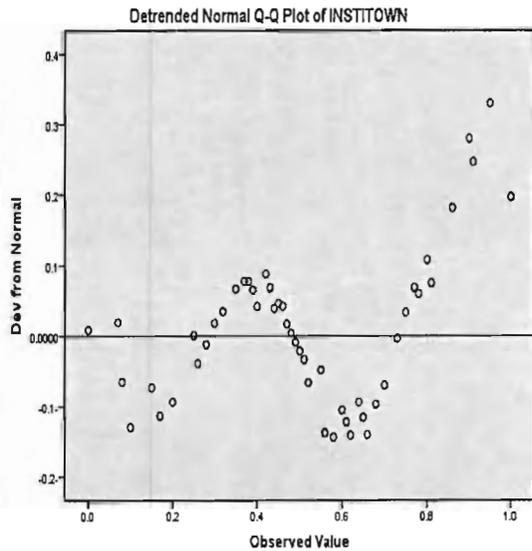
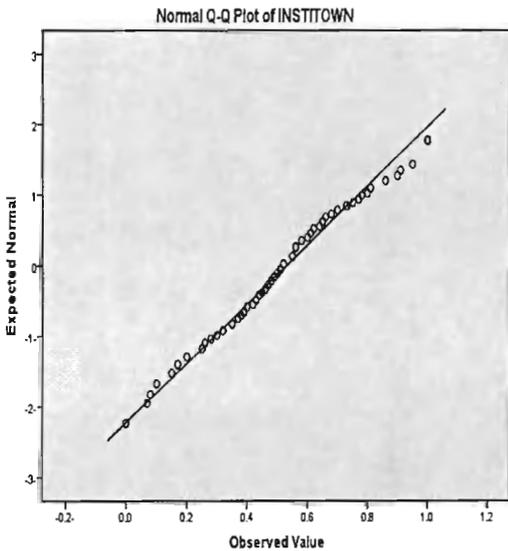
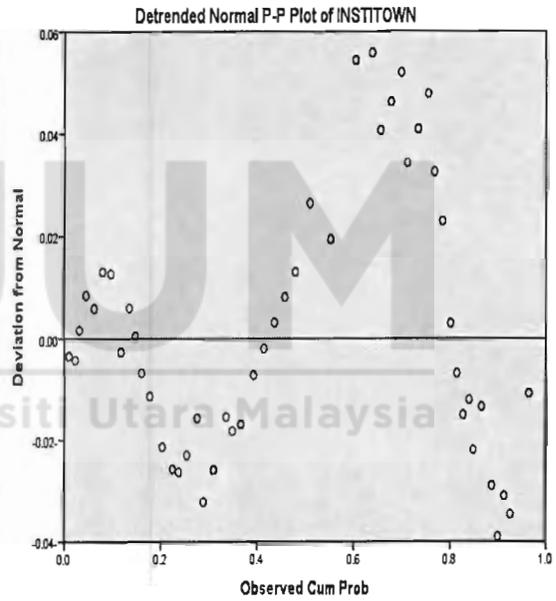
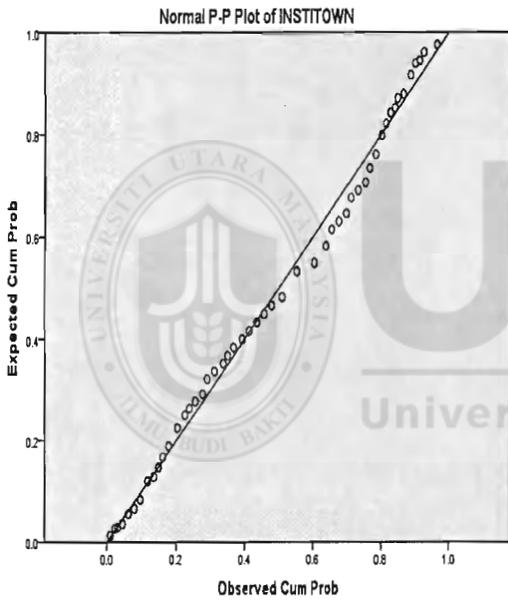
INSTITOWN

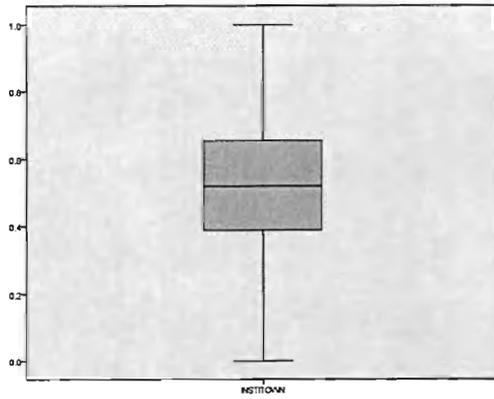


INSTITOWN Stem-and-Leaf Plot

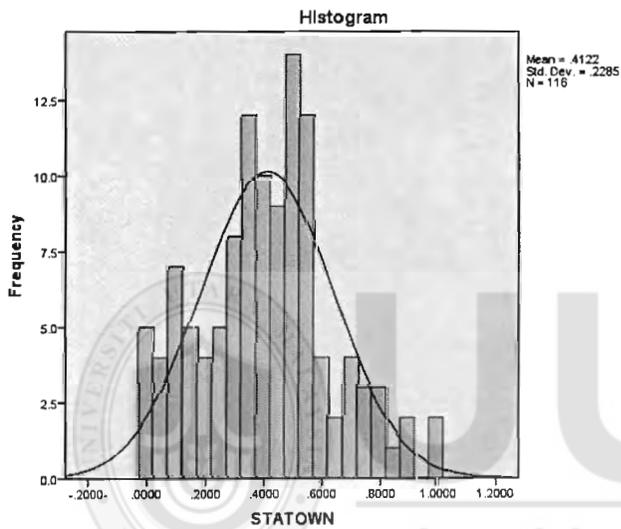
| Frequency | Stem & Leaf |
|-----------|-----------------------------|
| 4.00 | 0 . 0078 |
| 6.00 | 1 . 005577 |
| 8.00 | 2 . 00555688 |
| 13.00 | 3 . 0222555778999 |
| 21.00 | 4 . 002333344566677788999 |
| 23.00 | 5 . 00111222255555566666688 |
| 15.00 | 6 . 001112245555688 |
| 8.00 | 7 . 00335778 |
| 6.00 | 8 . 011166 |
| 4.00 | 9 . 0115 |
| 8.00 | 10 . 00000000 |

Stem width: .1000
 Each leaf: 1 case(s)





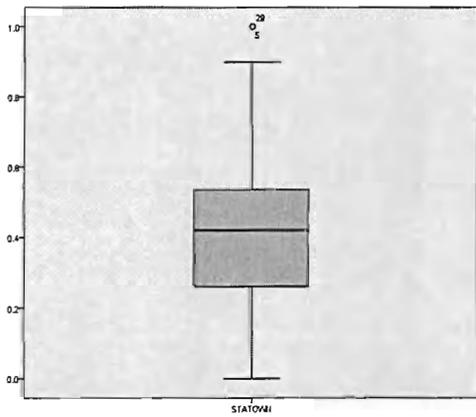
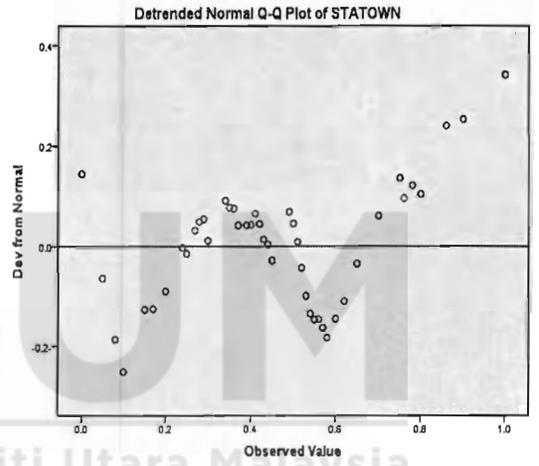
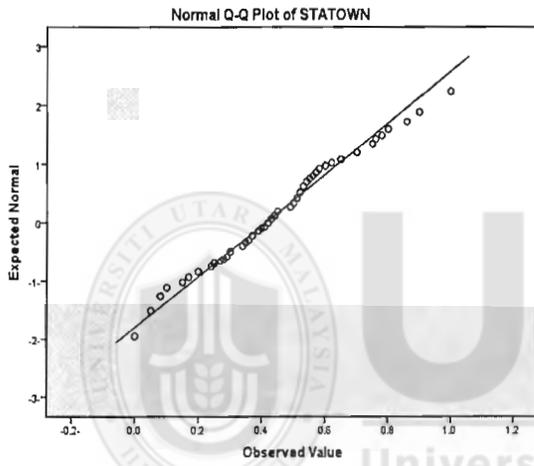
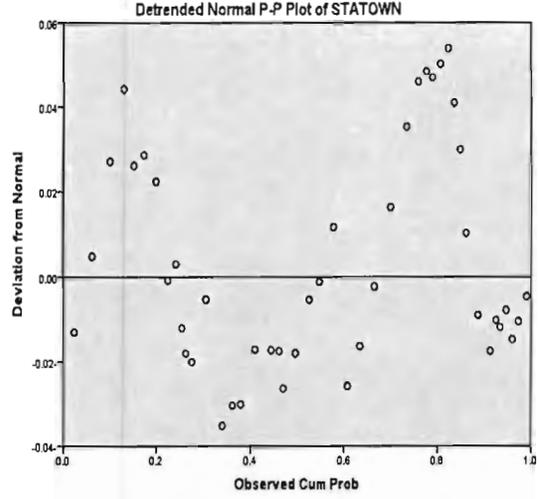
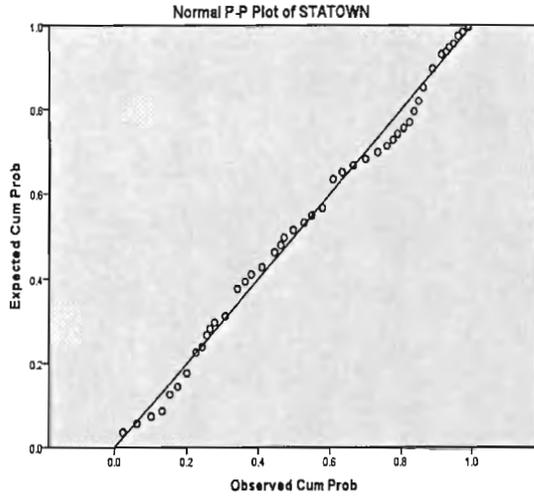
STATOWN



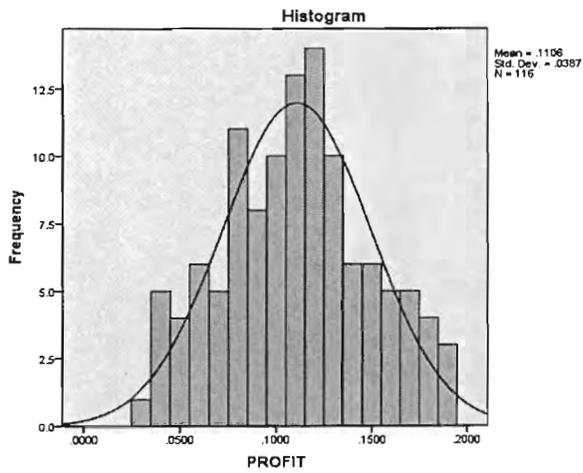
STATOWN Stem-and-Leaf Plot

| Frequency | Stem & Leaf |
|-----------|------------------------|
| 5.00 | 0 . 00000 |
| 9.00 | 0 . 555588888 |
| 2.00 | 1 . 00 |
| 5.00 | 1 . 55577 |
| 6.00 | 2 . 000044 |
| 6.00 | 2 . 557899 |
| 8.00 | 3 . 00000444 |
| 12.00 | 3 . 556677777999 |
| 12.00 | 4 . 012222233444 |
| 7.00 | 4 . 5555999 |
| 17.00 | 5 . 000111122222333344 |
| 7.00 | 5 . 5567778 |
| 3.00 | 6 . 002 |
| 2.00 | 6 . 55 |
| 4.00 | 7 . 0000 |
| 4.00 | 7 . 5568 |
| 2.00 | 8 . 00 |
| 1.00 | 8 . 6 |
| 2.00 | 9 . 00 |
| 2.00 | Extremes (>=1.00) |

Stem width: .1000
Each leaf: 1 case(s)



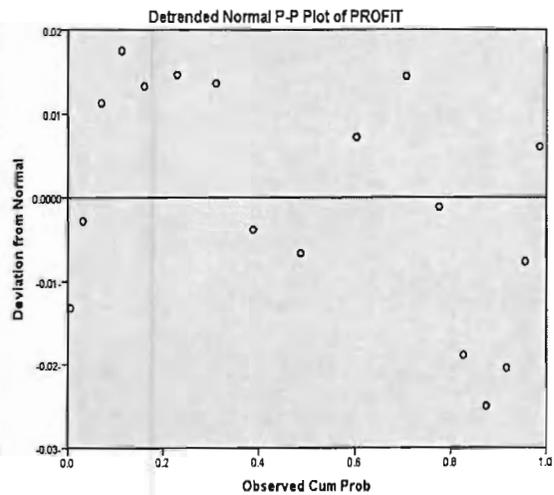
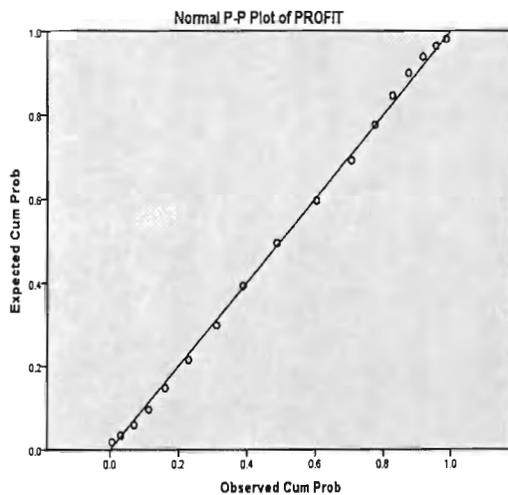
PROFIT

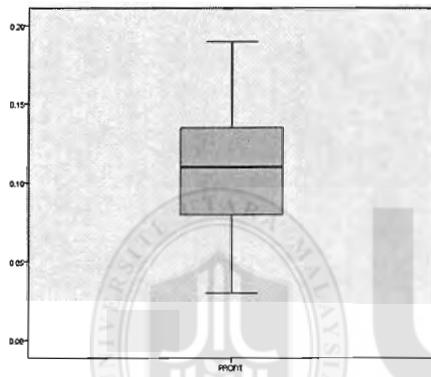
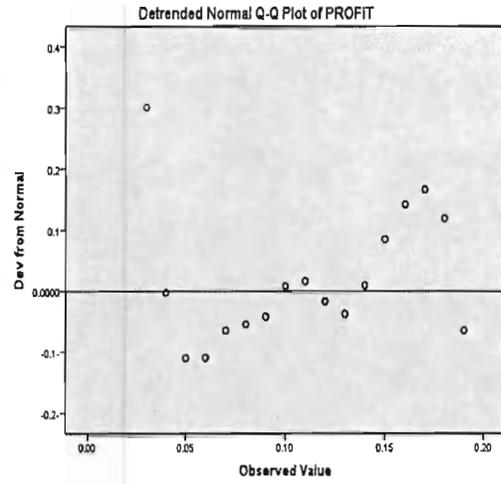
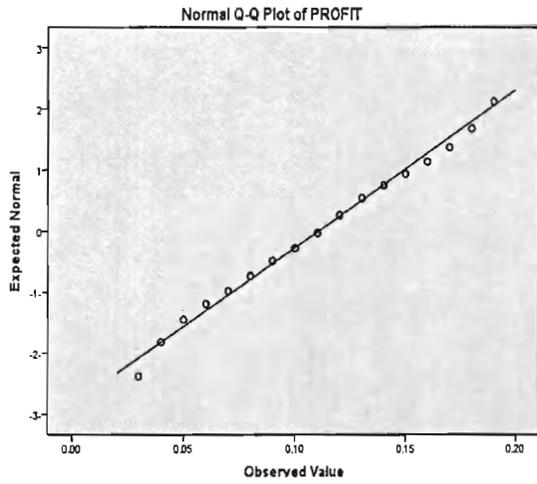


PROFIT Stem-and-Leaf Plot

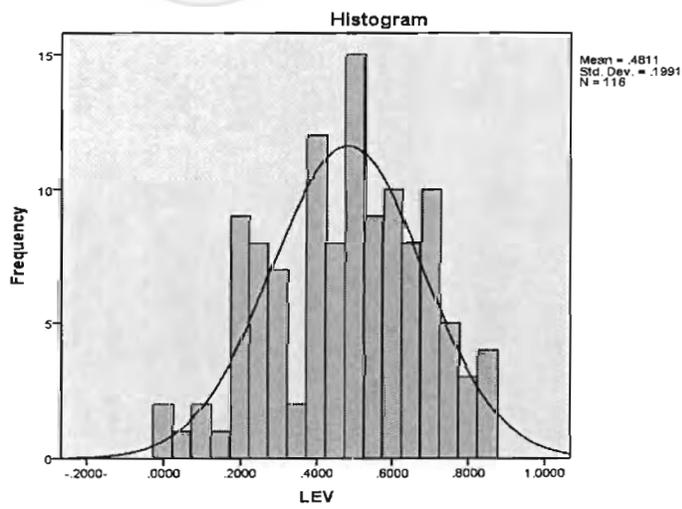
| Frequency | Stem & | Leaf |
|-----------|--------|----------------|
| 1.00 | 3 . | 0 |
| 5.00 | 4 . | 00000 |
| 4.00 | 5 . | 0000 |
| 6.00 | 6 . | 000000 |
| 5.00 | 7 . | 00000 |
| 11.00 | 8 . | 0000000000 |
| 8.00 | 9 . | 00000000 |
| 10.00 | 10 . | 0000000000 |
| 13.00 | 11 . | 000000000000 |
| 14.00 | 12 . | 00000000000000 |
| 10.00 | 13 . | 0000000000 |
| 6.00 | 14 . | 000000 |
| 6.00 | 15 . | 000000 |
| 5.00 | 16 . | 00000 |
| 5.00 | 17 . | 00000 |
| 4.00 | 18 . | 0000 |
| 3.00 | 19 . | 000 |

Stem width: .0100
 Each leaf: 1 case(s)





LEV



LEV Stem-and-Leaf Plot

| Frequency | Stem & Leaf |
|-----------|-------------------|
| 2.00 | 0 . 00 |
| 2.00 | 0 . 78 |
| 1.00 | 1 . 0 |
| 5.00 | 1 . 59999 |
| 5.00 | 2 . 12222 |
| 10.00 | 2 . 5566677789 |
| 5.00 | 3 . 01111 |
| 6.00 | 3 . 778999 |
| 11.00 | 4 . 00002222333 |
| 13.00 | 4 . 5667788888999 |
| 9.00 | 5 . 001122233 |
| 9.00 | 5 . 555577799 |
| 10.00 | 6 . 0001112244 |
| 10.00 | 6 . 5555558999 |
| 6.00 | 7 . 112222 |
| 7.00 | 7 . 5556688 |
| 3.00 | 8 . 033 |
| 2.00 | 8 . 55 |

Stem width: .1000
 Each leaf: 1 case(s)

