QATAR UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

ENVIRONMENTAL DISCLOSURE AND ITS IMPACT ON FIRM VALUE AND COST OF CAPITAL: THE CASE OF GCC LISTED CHEMICAL AND PETRO-CHEMICAL SECTOR

BY

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ABSTRACT

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Title: Environmental Disclosure and its Impact on Firm Value and Cost of Capital: The Case of GCC Listed Chemical and Petro-Chemical Companies

Supervisor of Thesis: Ousama Abdulrahman Abbas Anam.

Environmental sustainability and disclosure are widely debated branches of Corporate Social Responsibility (CSR) in today's corporate world. The concern is much wider among the environmentally sensitive industries. Nevertheless, the number of compulsory environmental disclosure (ED) laws are very limited for publicly-held companies in the Gulf Corporation Council (GCC). Hence, the mandatory environmental information discourse is less in the region. Review of the prior literature reveals that there are limited studies in the GCC that discuss this issue. 71 listed companies in the seven GCC stock exchanges categorized in the chemical and petrochemical sector serves as the sample. Firm annual report or CSR reports for the years 2010 and 2015 have been assessed using an ED index. This study aims to explore two dimensions (extent and quality) of ED and impact of which may have on firm value as well as on cost of capital. Whilst a dichotomous scoring measure the extent (QTED) of ED, a 4-point scoring (0-3) measures the quality (QLED). Results confirm improvements in QTED and QLED in the GCC for the duration of the sampled years. Yet, the environment reporting practices are still at the stage of infancy. The regression analysis mostly shows an insignificant relationship between firm value and cost of capital with environment disclosure (ED) scores; however, firm value (Market Capitalization and Enterprise Value) has identified a

positive relationship with ED in 2015.

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DEDICATION

To,

John Nash

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CHAPTER 1: INRODUCTION

1.1 Overview

Nowadays, an ever-increasing number of companies and corporations prefer to make their operations more sustainable along with long-term profitability. Viable financial growth is expected to go hand-in-hand with social and ecological sustainability. These expectations can be turned into reality with the implementation of intensive and enduring sustainable initiatives by business entities (Adams, et al., 1998; Adams & Kuasirikun, 2000; Gray, et al., 2001; Day & Woodward, 2004; Freedman & Patten, 2004; Smith, et al., 2005; Djajadikerta & Trireksani, 2012). Also, stakeholders demand in-depth disclosure on numerous corporate information (Gray, et al., 1987). Mandatory and voluntary disclosure demands by legal and social communities comprise of various corporate components including Corporate Social Responsibility (CSR) involvement, environmental information, ethics and code of conduct, employee and consumer related information and likewise (Mathew, 1993; Perks, 1993).

In the past decades, environmental activities and concerns have been dealt with greater importance by corporations, especially the ones operating in the environmentally sensitive industries (Manaf, et al., 2006; Tagesson, et al., 2009). Enhanced societal awareness as promoted by various the Non-Governmental Organizations (NGOs) that pressurize companies have made these issues (environmental concerns) as prominent as economic and political problems throughout the world (Clavier, et al., 2006; Toms, 2002). Furthermore, though driven with some financial incentives in mind, companies have also improved their societal and environmental contribution and its communication

channels over the years (Frost, 2007; Lu, 2008). Correspondingly, the branch of environmental accounting has attracted enormous attention from various international communities and environmental organizations in the past couple of decades than ever before (Eljayash, et al., 2013). Most of the eco-friendly institutions with respect to corporate, work under the primary objective of enhancing the disclosure and transparency in companies (Eljayash, et al., 2013) and in turn attain long-term tangible benefits. This also creates a societal perception of a good corporate citizen. However, the environment is always prone to calamities from the daily operations of companies in environmentally sensitive sectors in terms of toxic spills, leakage of chemicals, exploding of harmful matters (Griffin & Mahon, 1997). For instance, the Bhopal chemical leak in India 1984, Deepwater Horizon oil spill in 2010, and the recent West Fertilizer Plant explosion in 2013 are all examples of how environmentally sensitive corporations disrupt the ecological safety. The upsurge in the frequency of such disasters has increased public concerns. The public then questions the companies' negligence on environmental protection and safeguard initiations (Griffin & Mahon, 1997). Despite the huge proximity of environmental mishaps involved within the sensitive industries, do these companies adhere to mandatory and voluntary standards for environmental accountability? Do they seek to invest and improve the prevailing safeguarding measures? If so, is this information communicated to the stakeholders voluntarily? Moreover, does the market react to the corporate environmental reporting? In practice and in literature many of these questions remain unanswered.

Studies that explore the corporate environmental voluntary disclosures and

analyze its impact on the firm financial motives are much less in the Arab region in comparison to the rest of the world (O'Connor, 2006). Quite a handful of longitudinal studies (Eljayash, et al., 2012; Eljayash, et al., 2013; Eljayash, 2015) have assessed the quantity and quality of Environment Disclosure (ED) in the Arab region among selected sectors for multiple periods. Thereby, try to compare and contrast the changes in ED. Also, studies concentrating on individual GCC economies are often limited to Naser, et al., (2006), Alsaeed (2006), Al-Shammari (2008), Aljifri (2008), AlNaimi, et al., (2012), Khasharmeh & Desoky (2013) and Juhmani (2014). One primary weakness of these studies is the lack of ability to compare across multiple years and comprehend the ED trend in the GCC as a whole. Moreover, these studies fail to summarize the financial impact of disclosing corporate environmental information. Studies on the voluntary environmental reporting practices and its impact on firm's financial performance assists the company in designing better corporate decisions and thereby reduce the level of future economic uncertainty (Graham, et al., 2005). Nevertheless, the relationship between firm value and cost of capital with ED are not at all explored in GCC context. In addition, the literature shows ambiguous results with regards to the direction and magnitude of the relation between ED and firm performance and firm value (Hongjun & Xiaobo, 2010; Pled & Latridis, 2012; Plumlee, et al., 2015). Few studies demonstrated a positive relationship between ED and firm value (Clarkson, et al., 2011; Griffin & Sun, 2012; Matsumura, et al., 2014; Plumlee, et al., 2015). On the contrary, Hongjun & Xiaobo (2010) and Cormier & Mangan (1999) confirm no viable relationship. Likewise, the relationship between ED and cost of capital also has mixed empirical results as

presented in the literature. While studies of Richardson & Welker (2001) and Plumlee, et al., (2015) exceptionally show cost of capital and ED to be positively associated, results of Cormier & Magnan (2007), Aerts, et al., (2008) and Pled & Latridis (2012) contradict with a negative relationship among the same variables. Prior literature discussing the relationship between ED and firm financial indicators are visibly ambiguous. Hence, fail to correspond to consistency in forming a conclusion.

1.2 Background of the Study

1.2.1 GCC Chemical and Petrochemical Industry

The GCC forever has dominated the hydrocarbon industry (Gulf Petrochemicals and Chemicals Association, 2013). Hence, it comes as no surprise that they continue to retain the business excellence among subsidiary industries i.e., chemicals and petrochemicals sectors. Also according to the performance report of the Statistical Centre of the Cooperation Council for Arab countries of the Gulf (GCC-STAT), GCC held a total sum of 41,937 billion standard cubic meter of natural gas reserves and 496.4 billion (USD) of crude oil reserves during the year 2014 (GCC-STAT, 2015). Although the level of hydrocarbon revenue dependency has been diminishing slowly since 1990, yet, on average, for all of the GCC countries, oil and natural gas alone contributes to 80% of the government budget revenues (Devaux, 2013). In the recent years, under the initiation of international institutions like United Nations (UN), programs have been formulated to increase the share of non-hydrocarbon outputs in the Gross Domestic Product (GDP) of the region. Chemicals and petrochemicals are subsections of the manufacturing sector (Gulf Petrochemical and Chemicals Association, 2011). The Gulf Petrochemicals &

Chemicals Association (GPCA) established in 2006 functions as a regulatory authority in the GCC. With 250 member companies operating in the chemical and associated industries, they account for over 95% of chemical output in the Gulf region (Gulf Petrochemicals and Chemicals Association, 2013). According to the GPCA categorization, chemical and petrochemical industries deal with the manufacturing of products involving basic metals, rubber & plastic products, paper & paper products, publishing & printing, medical, precision & optical instruments, food products & beverages, electrical machinery and non-metallic mineral manufacturing[1]. Petrochemicals are a significant section of the chemical industry (Gulf Petrochemicals and Chemicals Association, 2013). They are chemical products derived from petroleum or natural gas. Numerous chemical products retrieved from petroleum or gas are also found from other fossil fuels like coal, or from renewable sources such as corn or sugar cane (Gulf Petrochemicals and Chemicals Association, 2015). The industry tops as the second largest manufacturing sector in the GCC region, producing up to 108 billion $US worth of products a year (Gulf Petrochemicals & Chemicals Association, 2016). Over the years, as the industry's strength and ability to optimize became more evident and has captured new markets, major oil producers started benefiting with increased revenues and rapid corporate expansion. However, the onset and evolution of GCC petrochemical industry took a historical turn, firstly, in 1981 with the commissioning of QAPCO's ethylene/polyethylene plant initiation in Qatar. The second was when methanol production took off at the AR-RAZI (SABIC's affiliate company) in Saudi Arabia in

[1] Refer Appendix B: Chemical and Petrochemical Categorization

1983. Along with Qatar and Saudi Arabia, the petrochemical and chemical industry is flourishing in the other GCC States extending to Bahrain, Kuwait, the United Arab Emirates and recently in Oman too. The primary drive behind the continuous growth of the industry is the obtainability of and access to natural gas feedstock and petrochemicals refinery integration in the region. The GCC enjoys significant energy advantages; nearly one-third of the world's oil and a quarter of world's natural gas reserves are found in this region (Gulf Petrochemicals and Chemicals Association, 2013).

In 2013, the annual GCC petrochemical production accounted for approximately 13% of the world petrochemical output by volume. This represents 35% of GCC's manufacturing value added and contributed to 6.1% of the GCC non-oil GDP. Furthermore, the industry experienced a 10% per annum growth during 2003-13 and has employed over 140,000 people. This is a milestone achievement, considering the short time span since the commencement of the industry in the region in the 1980s (Gulf Petrochemicals and Chemicals Association, 2013).

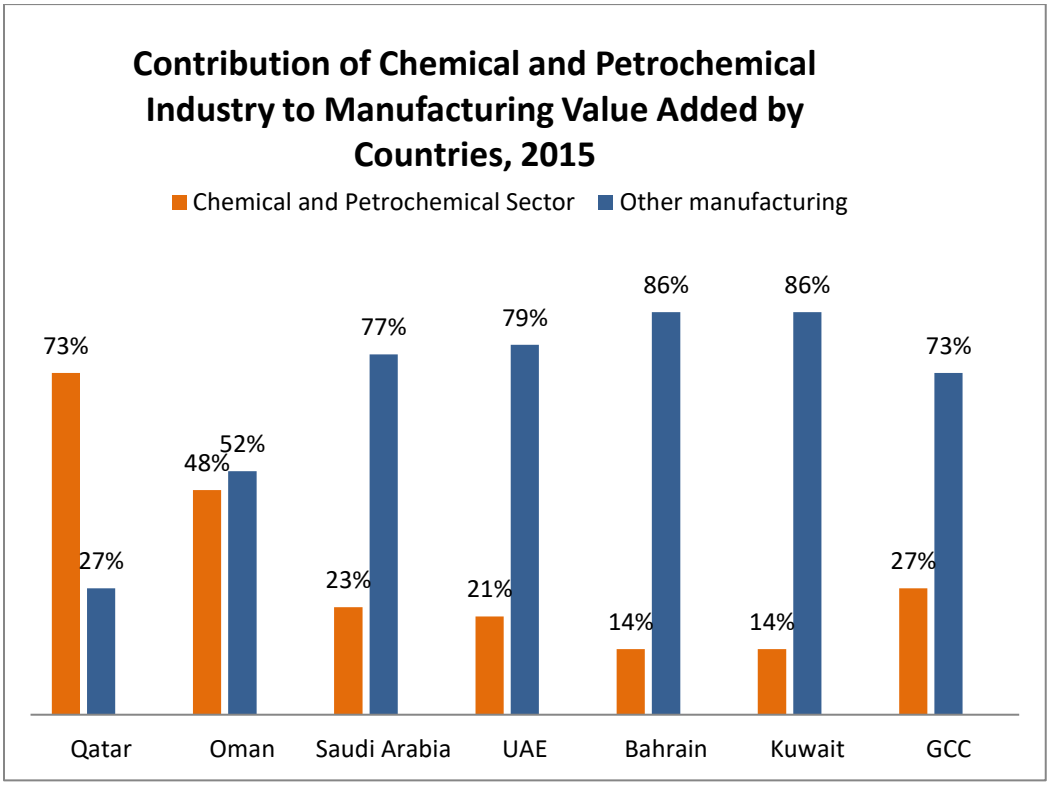

Figure 1 *Chemical and Petrochemical Value Addition, 2015.*
Source: 2016, Analysis GPCA, Bank World, IMF, Authorities Statistical National GCC: (facts and figures)

The GCC chemical industry is the second largest contributor to the manufacturing sector in the region. The sector alone represents a 2.9% of the GCC GDP and produces net worth of 97.3 billion US$ revenues (Gulf Petrochemicals and Chemicals Association, 2013). The industry directly employs more than 138,700 people and every job indirectly creating an additional three jobs in complementary industries (Gulf Petrochemicals &

Chemicals Association, 2014). Figure 1 shows the contribution of the chemical and petrochemical industry to the individual GCC economy and to the GCC as a whole. Almost 30% of the manufacturing sector value addition in the GCC is contributed by this sector. Qatar has the highest share (73%) of chemical and petrochemical value contribution, followed by Oman (48%) and Saudi Arabia (23%). Moreover, at the end of 2016, despite the oil price crisis which struck the international markets, the GCC petrochemicals capacity was estimated to be 150 million tons, representing a 3.7% growth from the year 2015. This compares to an average increase of 8.6% per annum for the period 2006-2016. The significance of these sectors in the GCC region in terms of value contribution and ecological impact makes chemical and petrochemical sector a crucial segment to further study and draw inferences from.

1.2.2 Environmental Protection and *Reporting Regulations in the GCC*

Higher the contribution of the chemical and petrochemical sector to the GCC economy, more the burden of the environmental cost it carries. For instance, according to the Global Economy and Development Program report, current industrial structures and consumption patterns places Qatar, UAE, Kuwait, and Bahrain among the highest per capita carbon dioxide (CO_2) emitters in the world (Meltzer, et al., 2014). Also, individual GCC economy studies portray similar alarming findings. For example, (Al-Mutairi, et al., 2017) conducted a study in Kuwait measuring the carbon footprint and found that the chemical industry ranked second with a significant share of CO_2

emissions (26%) among other industries. Also, industries involving petrochemical units, cement manufacturing plants, gas flaring and utilities in the GCC are generally among the highest contributors of CO_2 emission in the world. In an international CO_2 emission statistics, all six GCC nations are among the top 15 countries with respect to per capita CO_2 emissions (Meltzer, et al., 2014). Relatively, Qatar ranks the highest in the world, Bahrain ranks third, while the UAE and Kuwait are ranked fifth and sixth respectively. While chemical and petrochemical industries are busy dumping toxic industrial waste, the manufacturing industrial units contribute by polluting the environment by releasing dust and other deadly substances.

Yet on the bright side, like every other transitional – developing economy, the GCC is on its way to enhance their environmental sustainability plans. International organizations and national strategies play a vital role in designing, implementing and controlling actions in case of shortfalls. With respect to environmental protection from chemical and related industry, the GCC initiated the “Common System for the Management of Hazardous Chemicals" in 2002. Which establishes minimum legislation for the member states in dealing with hazardous chemicals (Chemical Watch, 2009). Other regulations include, The General Environment Protection Law (1995), The Common Law for the Environmental Assessment of Projects (1995), The Common Law for Waste Management (1997), Coordination of procedures among Member States for trans-border handling of hazardous waste for the purpose of processing, recycling or disposal (1997). Nevertheless, only a handful mandatory environmental disclosure laws have been implemented in the GCC and the voluntary practices are also at low level

(Boshnak, 2017). With respect to voluntary environmental commitment, almost all GCC nations have included environmental protection and sustainability into their national level strategic plans and vision statements. Yet, it is crucial to identify how the business pioneers in these respective economies conform to such state-level environmental strategic plans? For instance, in the Fourth pillar of Qatar National Vision 2030, the environmental development pillar clearly emphasizes on the significance of safeguarding ecological surroundings. It states the essentiality to create an agile and comprehensive legal system that protects all elements of the environment and responds quickly to challenges as they arise (Qatar MDPS (Ministry of Development Planning and Statistics), 2008). Also, the need of effective and sophisticated environmental institutions that build and strengthen public awareness about environmental protection, and encourage the use of environmentally sound technologies. These institutions will also conduct awareness-raising campaigns, employ environmental planning tools, and carry out environmental research (Qatar MDPS (Ministry of Development Planning and Statistics), 2008). It is worth noting that majority of such plans have to be implemented in practice, primarily by the corporate citizens of Qatar since their contribution to environmental protection is unquestionably crucial. Similarly, Saudi Arabia's 2030 vision has a section that explain the strategies to achieve environmental sustainability and sustainable environment. The report imposes Saudi citizens to safeguard biodiversity by increasing the efficiency of waste management, toxic emissions, establishing comprehensive recycling projects, reducing all types of pollution, fighting desertification, promote optimal use of our water resources by reducing consumption

and utilizing treated and renewable water (Saudi Gazette, 2016). Interesting enough, these environmental protection criteria are included in the ED index employed in this study to assess the quantity and quality of ED in GCC. In addition, the country vision reports of UAE, Oman, Bahrain and Kuwait also have parallel environmental protection sections. Under the "United in Prosperity" subsection of the UAE Vision 2021 report. It is stated that innovative solutions are to be implemented to deal with the rising issue of climate change and environmental degradation. New energy efficient technologies will harness UAE's pioneering role in green revolution and reduce its carbon footprints. Furthermore, policies are to be formulated at national level for corporations to reduce the nation's ecological deficit, environmental health hazards. Hence, promoting environmental protection awareness (UAE Cabinet, 2010). Likewise, Bahrain's Vision 2030 statement concerns over the investments in technologies that will assist corporations in reducing emissions, minimize pollution and promote sustainable energy (Bahrain Economic Development Board, 2008). On the other hand, Kuwait Vision 2020 provides a list of environment protection initiations conducted along with the contribution of corporate frontiers like solid waste management and improving air quality management. (Blair, 2009). Unlike the in-depth environmental sustainability sections of other GCC countries vision reports, Oman's 2020 Vision, with respect to environmental aspects is limited to the aim of pushing the economy towards a sustainable ecological environment (Ministry of Development, 1996).

It is worth mentioning that the lack of encouragement and reachability of environmental protection and reporting laws are the principal reason behind the

minimalistic environmental reporting practices in the GCC region. Making it further significant to study and draw conclusions on the voluntary corporate environmental disclosure practices, especially among the sensitive industries, like that of chemical and petrochemical industries in the region.

1.3 Research Problem & Contributions

From the academic perspective, this study aims to address the following research problem and add value to the field of existing ED literature. The research area of ED has been examined for several decades. Yet, unlike many types of prior research this study investigates the ED practices among one of the most environmentally sensitive business sectors, i.e. the chemical and petrochemical industry. Especially, this field of academic research is less explored in the GCC context. From the review of the former literature, it can be noted that ED studies in the GCC area are either restricted to individual year studies or general studies based on weak techniques of disclosure measurement. Correspondingly, this study draws on tracking changes in the extent (QTED) and quality (QLED) of ED over two time periods, thereby, allowing superior comparisons. Also, the inclusive index used in the study to measure the extent and quality of ED overlays a variety of environmentally significant reporting variables. Hence, providing a comprehensive analysis of ED. In addition, chemical and petrochemical companies' function with its high inherent risk to environmental harm compared to other manufacturing sectors. Furthermore, taking to account the value addition of these sectors to the GCC economy, it's rather high time to academically document the corporate behavior in terms of environmental commitment among these companies.

From a managerial point of view, not just for chemical and petrochemical industry, but GCC, in general lacks a comprehensive report on its ED sufficiency. In the 21st century, consumers are more sensitive to environmental and sustainability factors. Hence, it is vital for corporates to act and communicate its environmental commitment. Studies covering an all-inclusive industrial ED can be of useful for companies to better understand their own ED practices and also compare it with its competitors, and consider for further improvements. The study results can be used at a corporate level for the same.

Also, ED studies are most functional at a national strategic level. Similar to other developing countries, GCC also has limited mandatory and voluntary ED regulations. Due to which formal data on environmental disclosure matters are rarely available. The lack of these historical reports severely undermines the environmental policy making for future generations in the GCC. By covering the ED patterns among one of the most environmentally sensitive and value-adding sectors in the GCC, like chemical and petrochemical sectors, this study enriches the ED archives of the region. Moreover, most GCC economies have sections dedicated to environmental concerns in their vision statements (for example, Qatar national Vision 2030, UAE Vision 2021, Kuwait Vision 2020 and so on). The ED index item measuring how well companies conform to such national level environmental visions will allow countries to assess the reachability of its set environmental standards. In addition, national environmental strategic policymakers and environmental regulators can assess, infer and formulate or improve ED reporting regulations based on the study results.

1.4 Research Objective

The purpose of this study is to assess one of the CSR voluntary disclosure branches, i.e., the environmental disclosure (ED) among the GCC listed chemical and petrochemical companies. ED is a vital and demanded measure of corporate social responsibility reporting (Islam & Deegan, 2007). This study, first, aims to examine the quantity of environmental disclosure (QTED) (i.e. extent) and quality of environmental disclosure (QLED) by using a sample of listed companies in the chemical and petrochemical sectors the Gulf Cooperation Council (GCC). Secondly, it aims to test the trend of ED between the years 2010 and 2015. Third, it aims to investigate the effect of ED on firm value and cost of capital (i.e. cost of debt and cost of equity). Based on the above objectives, the following research questions are formulated.

1.5 Research Questions

This study aims to answer three major research questions,

Question 1: what are the quantity (i.e. extent) and quality of ED by GCC chemical and petrochemical companies in the years 2010 and 2015?

Question 2: is there a difference in the quantity (i.e. extent) and quality of ED between 2010 and 2015?

Question 3: what is the relationship between ED and firm value and cost of capital (i.e. cost of debt and cost of equity) of GCC chemical and petrochemical companies in the years 2010 and 2015?

1.6 Thesis Structure

The study comprises of the following chapters

Chapter 1: Provides an overview of the study with a brief introduction, a background of the chemical and petrochemical industry in the GCC, illustrating the research problem, contributions, objectives, and questions.

Chapter 2: Revolves around the literature review of the topic including assessing the quantity and quality of ED in prior literature. Also identifies the research gap in the studies on ED, firm value and cost of capital.

Chapter 3: Explaining the theoretical framework with respect to agency theory, stakeholder's theory, and legitimacy theory. The chapter also briefs on hypothesis development by combining the theory and literature conclusions.

Chapter 4: The methodology sections illustrates the research design, sample, and the measuring variables used in the study.

Chapter 5: Explains the empirical results of descriptive statistics, correlation, regression and trend test along with analyzing the reliability and validity of the data set.

Chapter 6: Reflects on the statistical findings and concludes the study. This section lists the study limitations and lays the foundation for future research prospects.

CHAPTER 2: LITERATURE REVIEW

The primary aim of this chapter is to lay the foundation for prior studies in the field of environmental disclosure. In effect, this chapter is categorized into two major sections. The first section draws on in-depth discussion of empirical studies assessing the extent and quality of ED. The definition of ED, the disparity of ED research among developing countries compared to developed countries and to its existence in the context of GCC region is specifically analyzed. The second section has been subcategorized into studies based on (1) ED and firm value and (2) ED and cost of capital. The variability of results among the diverse ED and firm financial performance studies are comprehensively concluded.

2.1 Assessing the Quantity (QTED) and Quality (QLED) of the ED

ED as has been defined by the Association of Chartered Certified Accountants (ACCA) as the combination of narrative including objectives, explanations and numerical information such as emission amount, resource consumed on corporation's environmental impact for the particular accounting period ACCA (as cited in Clavier, et al., 2006). The environmental dimension of sustainability reporting concerns an organization's impact on living and non-living natural systems, including ecosystems, land, air, and water. Environmental Indicators cover performance related to inputs (e.g., material, energy, water) and outputs (e.g., emissions, effluents, waste). In addition, they cover performance

related to biodiversity, environmental compliance, and other relevant information such as environmental expenditure and the impact of products and services (Global Reporting Initiative, 2015). In the last couple of decades, accounting research has witnessed a tremendous upsurge in the number of studies in the field of corporate environmental disclosure. This has been partially due to the increased identification in the societal notion of protecting the environment as a social responsibility and commitment of corporations (Goswami, 2014). With this regard, most companies are pushed to consider environmental reporting as a vital consideration in establishing corporate reputation, growth and sustainability in the long run. Hence, there exists a great opportunity for academic researchers to investigate and explore the section of corporate environmental disclosure in the CSR branch of disclosure. In addition, studies also examine environmental disclosure practices along with probable changes that occur in the organizations as a result of disclosure reporting practices, identifying the possible motivators of and determinants that impact the level of environmental disclosure (Tinker & Gray, 2003; Al-Tuwaijri, et al., 2004; Elsayed & Hoque, 2010). The results of such studies lay the baseline to formulate management policies, assist policymakers of environmental protection laws and frame national level environmental strategic visions. The following sections review previous studies that are relevant to the ED practices. Consequently, it leads to the identification of the gap in the literature with regard to the reporting of quantity (QTED) and quality (QLED) of ED. Many studies in the field of ED has been conducted in developed nations compared to the developing countries (Eljayash, et al., 2013). Over the years, ED has become a highly sought area in the CSR branch of

disclosure for companies and in the research of developed countries like the United States of America (USA) (Aerts, et al., 2008; Pled & Latridis, 2012), the United Kingdom (UK) (Harte & Owen, 1991; Gray, et al., 2001), Japan, Australia (Deegan & Gordon, 1996), Canada (Bewley & Li, 2000) and the countries of the European Union (Eljayash, et al., 2012). Craig Deegan and Ben Gordon (1996) have conducted one of the earliest studies regarding ED. The study concluded with results mentioning that ED practices are more among the sensitive industry in Australian companies and notably stated that ED evolved only between 1980 and 1991 (Deegan & Gordon, 1996). Early corporate environmentalists like Shell Canada (in the petrochemical industry) produced its 'Progress towards Sustainable Development' report in 1991 and was among the first in the industry to release a stand-alone Environmental Report. Since the early 1990s, such voluntary disclosure practices raised the ecological commitment bar for the entire business world and ever since ED studies have taken a toll. Harte and Owen (1991) examined the green reporting practices of British companies using 30 annual reports and advocated for enforceable external standards for environmental reporting (Harte & Owen, 1991). Their study also questioned the credibility of the quality of disclosure that the institutions provide. Similar to the study of Gray, et al., (2001), Ingram & Frazier (1980), Rockness (1985) and Wiseman (1982) examined a sample of UK companies and concluded with results showing fewer disclosure practices in the corporate world. A comparative study conducted by (Gamble, et al., 1995) investigating the quality of ED in 10K and annual reports for 234 companies belonging to petroleum refining, hazardous waste management, steelworks and blast furnaces industries found that these sectors have

the highest quality of environmental reporting. Similarly, attention to environmental accounting has witnessed a boom in North America, the USA and Canada in the recent decades (Eljayash, et al., 2012). Studies show significant benefits for companies that disclose high-quality data on environment information. Similar results have been achieved by Pled and Latridis (2012). The study examined the quality of CSR disclosures among the environmentally sensitive industries in the US. It consisting of companies operating in oil and gas extraction, chemical production, food manufacturing and fabricated metal production. It was proved that corporates running businesses in the environmentally sensitive sectors tend to disclose higher quality environmental related information in their respective CSR reports. Public and private sector companies in the US are given special attention to environmental concerns and reporting them in the annual reports (Aerts, et al., 2008). In addition, the ED quality is directly dependent on the occurrence of an environmentally impactful event in Canada among the industrial sector (Bewley & Li, 2000).

In contrast, there are few studies in the developing countries addressing the ED practices. Most studies show that developing countries suffer from environmental reporting. The Emerging economies have a fair share of ED studies in countries like India, Malaysia and Singapore and Korea (Eljayash, et al., 2012). Most of the studies conducted in East Asian countries, inferred that compared to developed nations environmental disclosure is inadequate in the developing countries. Research in the area of ED in these economies includes studies in India by (Sahay, 2004; Pramanik, et al., 2009) and in Malaysia and Singapore (Romlah, et al., 2003; Smith, et al., 2007;

Thompson, 2002; Yusoff & Lehman, 2005). Choi (1999) and Dasgupta, et al., (2006) in Korea, Walter G. Blacconiere and Dennis M. Patten (1993) studied the chemical industry environmental disclosure in light of the Bhopal chemical leak in India. Their study solely captured the response of ED and the market within the radius of the particular event (Blacconiere & Patten, 1993). A time series study conducted by Paul & Pal (2001) inspected annual reports of 23 Indian companies for a sample period of 13 years (i.e., from 1986-87 to 1998-99) assessing the corporate environmental reporting they came to the conclusion that ED, with the passage of time, is on its way to improve without any legal compulsion or formal guidelines. Yet, recent studies by Chatterjee & Mir (2008) while examining the status of ED by top 45 Indian companies (based on market capitalization) found that the disclosed information was vaguely narrative. Likewise, the study of Sen, et al., (2011) analyzed the nature and extent of the environmental disclosure practices of Indian core sector companies concluded that the information provided to be narrative and varied significantly across sectors as well as corporations. Both studies concluded that the ED reporting practices were descriptive in nature and fail to contribute to any decision making.

Accounting research by itself is suffering from few research studies when it comes to the Arab region (Eljayash, et al., 2012). Studies discussing environmental reporting in companies are also less in these areas. O'Connor (2006) stated that published studies in the Middle East with respect to issues concerning the environment are so low that it is among the lowest in the world map of environmental research. However, considering the inheritance of environmentally sensitive industry placements in the

region, exploration of the extent and quality of ED in corporations are still at bay. Eljayash, et al., (2013) conducted a comparative study using content analysis on the difference in environmental disclosure practices (quantity and quality) among the national and international oil and gas corporations in the Arab petroleum exporting countries for the financial year of 2008-2010. The results showed that there has been an improvement in the disclosure quantity over the years. Furthermore, looking at the quality aspect of the environmental disclosure in the literature, which is more crucial in evaluating the company's performance, there seems to be, on average an enhancement over the past years. Other comprehensive studies that have explored ED in the MENA region include Akrout & Othman (2013) and Eljayash (2015). Akrout & Othman (2013) analyzed websites of 153 listed companies in the MENA emerging markets in order to assess the ED practices for the year ended 2010. The study only analyzed the quantity disclosure of ED and concluded the disclosure scoring to be low. On the other hand, Eljayash (2015) analyzed the three Arab countries (Egypt, Libya and Tunisia) with respect to both quantity and quality for the years during 2008-2010. There has been numerous individual studies conducted among the GCC nations on CSR disclosures, voluntary disclosure (VD) and environmental disclosure (ED) (Naser, et al., 2006; Hossain & Hammami, 2009; Alsaeed, 2006; Al-Shammari, 2008; Aljifri, 2008; AlNaimi, et al., 2012; Khasharmeh & Desoky, 2013; Juhmani, 2014). Naser, et al., (2006) by using 21 listed Qatar companies and Hossain and Hammami (2009) by using 25 listed companies found similar results of a low level of social and environmental reporting in Qatar. Similarly, Alsaeed (2006) examined the CSR disclosure practices by using 20

voluntary disclosure items in 40 firms in Saudi Arabia and found that the mean of the disclosure index was lower than average. Also, Al-Razeen & Karbhari (2004) studied listed and non-listed companies in Saudi Arabia and identified positive relationship between mandatory disclosure and voluntary disclosure, though the index score was found to be low. Individual studies were conducted in Bahrain (Juhmani, 2014) and Kuwait (Al-Shammari, 2008). The study of Juhmani (2014) resulted that 57.57% of the sampled listed companies provided social and environmental information in their 2012 annual reports and their websites in Bahrain. Al-Shammari (2008) assessed corporate environment and social responsibility disclosure practices based on annual reports of 82 companies listed in the Kuwait Stock Exchange (KSE) for 2005. The empirical evidence depicted that voluntary disclosure level, measured by the index, for the overall and each category is relatively low.

Nevertheless, one lesson to be taken away from the social and environmental studies in GCC is, on an international comparison, the ED practice in the region is still at the infancy stage. Publication of corporate environmental disclosure reports is a relatively new concept in GCC companies and very few studies have been conducted in this regard (Khasharmeh and Desoky, 2013). This is the primary justification for the limitation of ED studies conducted in GCC countries. In order to increase the focus on the GCC countries' stock markets as important avenues for attracting foreign investments and to encourage local residents to invest in shares, GCC companies may need to engage environmental disclosure practices as a tool to enhance the reputation and value of the company (Khasharmeh and Desoky, 2013). The literature discussing ED with respect to

the GCC economy is only a handful. Furthermore, most research in the Arab region either studies ED with respect to individual GCC economies or the study solely concentrates on a single year. There is also a lack of in-depth studies examining the quantity and quality of ED reporting in the Gulf region, only with few exceptional studies like that of Eljayash, et al., (2013). In addition, significance of the chemical and petrochemical industries with regards to its value-added contribution to each GCC economy and also the sector's exposure to various threat of ecological harm makes it crucial to assess the ED position of these companies. The results of this study can be of useful for better understanding of the quantity and quality ED practices followed in the GCC, it can be of interest to corporate citizens to be more informed about their disclosure quality. Hence widen the scope of ED practice. In addition, national environmental strategic policymakers and environmental regulators can assess, infer and formulate or improve ED reporting regulations. The study also aims to add value and enrich the currently available literature on ED in the GCC.

2.2 Relationship between ED and Firm Value and Cost of Capital

Managers in general involves in determining the firm's disclosure practices, especially voluntary disclosures. Based on the behaviour of disclosure information, for instance, does the voluntary reporting practices impact the firm's financial performance, firm value, leverage, cost of capital and information risks. Such information assists the company in designing better corporate decisions and thereby reduce the level of future economic uncertainty (Graham, et al., 2005). But most studies concludes with varied

results based on how the ED impacts firm's financial position. For Instance, Margolis and Walsh (2003) and Orlitzky, et al., (2003) had found similar mixed relationship among the disclosure variables and firm financial performance. Margolis & Walsh (2003) found that 4% of the 160 studies reviewed found a negative relationship between social and environmental disclosure and financial performance, 55% had a positive relationship, 22% with no probable relationship. Couple of studies concluded the existence of positive correlation between ED and firm financial position. Fortes (2002) examined the significance of environmental reporting in Sweden and observed that environmental reporting showed notable benefits to businesses. The study observed that the volume of disclosure is related to the turnover, capital employed, number of employees and profit, as larger and more profitable firms have disclosed more environmental information. Chen, et al., (2015) identified a strong positive relationship between ED and financial indicators. On the other hand, studies of Barako, et al., (2006), Smith, et al., (2007), Shirley, et al., (2009) and Pozniak, et al., (2011) found no relationship between ED and firm financial characteristics. Mixed results have been produced by studies on the impact of ED disclosure on many firm economic indicators; this may be due to usage of widely differing research methodologies and also because of lack of objective measures for environmental performance and disclosures (Moneva & Cuellar, 2009).

The Following section of the literature review will attempt to comprehensively assess prior literature explaining the relationship between (2.2.1) ED and firm value and (2.2.2) ED and cost of capital.

2.2.1 ED and Firm Value

Research on the impact of non-financial disclosure on firm value is less explored (Schiager & Haukvik, 2012) compared to studies conducted based on financial disclosure and firm value. As the focus on environmental and social consciousness is on increase in recent times there is a greater demand for studying the relationship between corporate environmental disclosure reporting practices and firm value (Schiager & Haukvik, 2012). ED and firm value are primarily discussed within the light of shareholders theory. Further analysis of the theoretical background is explained in the upcoming chapters.

Previous studies have used cumulative abnormal stock returns, market capitalization, earnings per share, enterprise value, Tobin's Q and so forth as indicators of firm value (Schiager & Haukvik, 2012). Like most ED determinant studies, ED and firm value do have mixed results. Quite a few number of studies have conducted ED analysis in the environmentally sensitive industry and its impact on firm valuation with respect to the occurrence of particular events. For example, Hua & Guoqing (2008) studied the impact of "Songhua River contaminated" accident with related to how the share price fluctuated in the market for those companies involved in the related industries based on their environmental information disclosure. It was found that the stock market had a negative reaction to the legitimacy of the company. Similarly, Blacconiere & M. Patten (1993) studied the reaction of the market after the 1984 Union Carbide chemical leak. The study investigated companies in the chemical industry except for Union Carbide. Consistent with the results of Blacconiere & Patten (1993), the study concluded that firms that had extensive environmental disclosures in their financial report prior to the chemical

leak experienced lesser negative impact on firm value compared to firms with lower disclosures practices. Such studies concentrate solely on the outcome or the behavioral pattern of financial items based on an abnormal event, hence failing to provide a stable and generalized understanding of the ED and related firm value variables. These studies though different from the current investigated the impacts of specific environmental events on firm value measurements, yet their findings prove the existence of the relationship between environmental reporting and firm value (Schiager & Haukvik, 2012).

There are few studies that suggest positive relationship among ED and firm value, for instance (Griffin & Sun, 2012; Clarkson, et al., 2013; Matsumura, et al., 2014 and Plumlee, et al., 2015). Some studies could not find a significant association (for example, Hongjun & Xiaobo, 2008; Cormier, et al., 2011). Studies like that of Belkaoui (1976) when tested the average monthly abnormal returns of 50 corporate with voluntary environmental disclosure and 50 with no environmental disclosure within the industry, showed there existed no noteworthy correlation between the ED and firm value variables. Ingram (1978), used a sample of 287 US firms found no significant impact on the firm value as such contributed by the voluntary environmental disclosure in annual reports. Also, it was further justified by Cormier, et al., (2011) that the voluntary environmental disclosure in the annual report could not affect the share price of a corporate directly. A couple of studies also shows negative relations among the concerned variables. Hua & Guoqing (2008) studied the share price and environmental disclosure pattern. They found that the stock market had a negative reaction to the legitimacy of the company. Clarkson,

et al., (2010) and Plumlee, et al., (2015) studied the impact of voluntary environmental disclosure on overall firm value. Clarkson et al., (2010) confirmed that ED being valueed relevant for investors in their assessment of future environmental risks and liabilities. Hence, a positive relationship between non-mandatory ED and overall firm value. Plumlee, et al., (2015) also documented evidence of an overall positive effect of environmental disclosure on firm value. More recent works of Griffin & Sun (2012) and Matsumura, et al., (2014) also provided supporting evidence for the positive link between ED and firm value. Griffin & Sun (2012) used event study to explore the response of shareholders to the voluntary disclosures information on greenhouse gas emissions. The results showed that shareholders respond positively to environmental disclosures and thereby enhancing the firm value. Similarly, Matsumura, et al., (2014) documented a positive relationship among ED and firm value of the company based on the level of company's carbon emissions disclosure details. These research outcomes advocate that environmental disclosures are positively relevant to the improvement firm value.

2.2.2 ED and Cost of Capital

The literature on ED and cost of capital states similar stories of mixed relationship results. Dhaliwal, et al., (2011) studied the relation between non-mandatory social disclosure and cost of capital thereby trying to investigate whether publishing voluntary disclosure will lead to any possible reduction in the future cost of capital of the company. The results presented that firms with a high cost of capital in the previous year are more likely to provide voluntary corporate social and environmental disclosure in the present year. Moreover, there are a couple of studies that failed to show an insignificant

relationship between ED and cost of capital. For instance, Clarkson, et al., (2010) examined the impact of voluntary environmental disclosure on cost of capital. The evidence confirmed that there is no significant effect on the cost of capital caused by ED. Correspondingly, Richardson & Welker (2001) found that social disclosure (includes environmental disclosure) behaved contrarily than other economical disclosure while tested association with the firm's cost of capital. There exists a significantly negative relation between the level of financial disclosure and the cost of capital (Botosan, 1997). Yet, the study conducted by Richardson & Welker (2001) shows a significantly positive relationship between social disclosure and cost of capital. The study documented a significant positive association between CSR and the cost of equity for a sample of Canadian firms during the early 1990s, inconsistent with theory. Consistent with the positive findings of Richardson and Welker (2001), Plumlee, et al., (2010) also found relevant positive relationship between ED and cost of capital. The study used a self-constructed environmental disclosure quality index. Nonetheless, the study also found a negative association between the issuance of standalone CSR reports and cost of capital (Plumlee, et al., 2010). This pertains to the discretionary disclosure theory that predicts decreased information asymmetry to reduce the cost of capital. Whereas, Results of Cormier & Magnan (2007), Aerts, et al., (2008), and Pled and Latridis (2012) are contrary to Richardson et al.'s findings. Aerts, et al,. (2008) found that as the environmental disclosure practices are enhanced it translates into more precise analyst earnings forecasts. Thus, hinting at a reduction in the firm's cost of capital and also increased stock prices. The study showed varying results for different industries and

countries (Cormier & Magnan 2007; Aerts, et al., 2008). Nevertheless, the impact is mitigated for environmentally sensitive industries. Similar to the results Pled & Latridis (2012) identified a negative relationship between the environmental reports (part of CSR) and cost of capital (equity) which reflects as an evidence showing that firms willfully report high-quality disclosure information to maintain or enhance the shareholder's perspective of the company and thereby reducing the cost of equity. Xuan, et al., (2014) documented the behavior of cost of debt in relation to the level of corporate ED. The study used Shanghai and Shenzhen-listed thermal power companies for the years 2008 to 2012 and the results showed ED extent of listed companies to impact negatively to the cost of debt.

In summary, prior research has not found a consistently significant association between ED and firm value and ED and cost of capital. The results vary from an insignificant relationship, negative relationship, to positive strong correlation. To conclude, this study also finds a paucity of studies conducted in the GCC in the context of ED and firm financial measurements (firm value and cost of capital). For instance, recent studies of Alsaeed (2006), Naser, et al., (2006), Al-Shammari (2008), Aljifri (2008), Hossain and Hammami (2009), Al Naimi, et al., (2012), Khasharmeh and Desoky (2013), Juhmani (2014) and Zubek & Mashat, (2015) has successfully analysed the ED in the GCC regions. Nevertheless, the studies conducted in GCC suffer from several limitations. It must be noted that most GCC oriented studies base their findings on a single year ED analysis (Naser et al., 2006; Hossain and Hammami, 2009; Khasharmeh and Desoky, 2013 and Juhmani, 2014). Other shortcomings include, for instance, Akrout

& Othman (2013) analyzed websites for a single year ended 2010, also ignoring any formal corporate document, like that of an annual report or CSR report. Likewise, studies of Juhmani (2014) in Bahrain and Al-Shammari (2008) in Kuwait concentrated on a single year ED variable. Hence, providing no scope for comparison. Similarly, the studies of Naser, et al., (2006) and Hossain and Hammami (2009) suffer from the inadequacy sample size. Naser, et al., (2006) used 21 and Hossain and Hammami (2009) had 25 listed companies in Qatar to conclude the study results. In terms of ED measurement, Akrout & Othman (2013) used environmental indicators developed within the framework of the Global Reporting Initiative (GRI), whereas this study accommodates both GRI items plus other ED variables of measurement from prior studies. Also, most of these studies primarily concentrate on the relationship of ED with financial indicators like firm size, firm age, ownership status, leverage and profitability. The literature has failed to accommodate broader corporate economic indicators like firm value and cost of capital in the study.

Thus, this study intends to fill this gap by investigating the relationship between ED and firm value, so that a comprehensive picture of ED on corporate valuation can be can be captured thereby measuring market reaction to environmental reporting in GCC. In addition, this study also aims to identify a probable relationship between ED and cost of capital in the GCC region which will act as an incentive for companies to expand the disclosure practices to reduce the cost of raising financial resources.

CHAPTER 3: THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

In this chapter, firstly, a detailed review of the most widely used theories to explain the ED practices among corporates are explored. The theoretical explanation behind the corporate motivation to prepare and publish ED information with respect to agency theory, legitimacy theory, and stakeholders' theory are reviewed in the following section. Also, the proposed conceptual framework and hypothesis testing follow it.

3.1 Theoretical Framework

With regards to social and environmental disclosure practices, Belkaoui & Karpik (1989), Gray, et al., (1995) and Omran & El-Galfy (2014) questions the idea of the existence of a theory that can be universally applied to all situations and people. The applicability of a certain theory depends on various characteristics of the scenario. Hence, theorists use two or more theories to explain a particular phenomenon (Prastiwi, et al., 2007). Over the years, different theories have been advocated in the literature to explain variations in corporate voluntary environmental disclosure. They can be classified into first, Positive Accounting Theory (PAT), which includes the agency theory and signalling theory. Secondly, the Political Economy Theory (PET), like stakeholder theory and legitimacy theory. Additionally, signalling theory, political costs hypothesis, media agenda-setting theory and political economy of accounting are also explained in various studies (Campbell, 2004). All of them have fair share of scientific explanation with respect to possible frameworks of motivation for environmental reporting. Yet, the most

commonly used theories are the stakeholder theory, legitimacy theory and agency theory (Bayoud, et al., 2012 and Reverte, 2009). Hence, the conceptual model of this study will place its foundations using the same.

3.1.1 Agency Theory

Agency theory is a part of the modern-day strict economic theories (Wang, 2016). A closer look at the literature shows that a number of studies employed agency theory to explain the disclosure variation (Jensen & Meckling, 1976; Wallace, et al., 1994; Wallace & Naser, 1995; Naser, 1998; Naser & Al-Khatib, 2000). According to Jensen and Meckling (1976), an agency relationship is defined as "a contract under which one or more persons (the principals) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent." In a corporate setting, agents are managers, whereas principals correspond to the firm's shareholders. They both are responsible for two different sets of agency cost and the theory assumes that the two parties, agents, and principals have different corporate interests. Hence, due to the existence of agency relationship, the problem of information asymmetry arises since the managers can access information more than shareholders (Jensen & Meckling, 1976). Optimal contracts and voluntary disclosures are two ways to reduce the agency problem. The mere explanation of agency theory assumes that the management tends to voluntarily disclose detailed information to reduce agency costs in the future (Naser, et al., 2006).

In the literature, there are quite a handful of studies that have explained ED with respect to agency theory (Mak, 1991; Ness & Mirza, 1991; Liu & Lu, 2007; Huang, et al.,

2008). Agency theorists predict voluntary disclosure (of which social and environmental disclosure is a large part) by firms as a means for reducing agency costs (Ness & Mirza, 1991; Mak, 1991). In addition, further studies of Liu and Lu (2007) and Huang et al., (2008) suggests that enhanced accounting practices and societal and environmental disclosure reduce the agency costs. In this theory, the level of ED issues by a corporation is primarily pointed at the very own objective of achieving a financial benefit i.e., reduced costs. Belkaoui & Karpik (1989) explains that agency theory views company being in a contractual relationship with the numerous economic agents that act opportunistically in an efficient market. With respect to this context, the theory provides validation for social responsibility and environmental disclosure Belkaoui & Karpik (1989). Agency theory in the context of enhancing firm value by increased environmental disclosure is not a widely discussed area. Few studies like (Grossman & Hart, 1982) and (Williams, 1987) finds that high leverage reduces agency costs and increases firm value by encouraging managers to act more in the interests of equity holders. Agency theory has been widely used to explain the possible relationship between environmental disclosure and cost of capital (Fama & Miller, 1972; Jensen & Meckling, 1976; Alsaeed, 2006). Studies show that with more voluntary environmental disclosures, companies attempt to reduce the cost of apital by reducing investor uncertainty and thereby reducing agency cost. Fama & Miller (1972) and Alsaeed (2006) prove that highly leveraged firms have higher agency costs of debt and incur more monitoring costs (Jensen & Meckling, 1976). In order to manage the agency and monitoring costs, firms with high leverage voluntarily disclose more environmental information.

3.1.2 Legitimacy Theory

Legitimacy theory is one among the most dominant perspective used to explain the corporate social and environmental disclosure practices among companies (Patten, 1991; Deegan & Gordon, 1996; Adams, et.al., 1998; Relch, 1998; Deegan, 2002; Milne & Patten, 2002; O'Donovan, 2002;). The societal pressure of being a good corporate citizen dictates legitimacy theory. This theory states that legitimizing the activities are the way by which a firm attempts to justify its societal existence. Legitimacy theory is used to explain disclosures with regards to the environmental and social disclosure practices of companies (Neu et al., 1998; Deegan et al., 2002, Milne and Patten, 2002; Deegan, 2002; O'Donovan, 2002). According to social-political theories, like legitimacy theory, the public has access to more than basic necessary information. Based on the theory even the negative impacts of the companies' operations are disclosed (Neimark & Tinker, 1987). Patten (1991) inferred that the pressure groups within any given society demand the organizations to acknowledge and address the prevailing social issues. According to legitimacy theory, the entity's management's initial response is to improve its communication (Mathews, 1993). By confirming to such societal pressures, the company ensures survival and continuity within, and also by voluntarily disclosing detailed information to society with a clear agenda to prove that the company is s a good corporate citizen (Guthrie & Parker, 2012). Also, environmental legitimacy helps the companies to avail many benefits. For example, legitimate firms are found to have better transaction chances with partners and better access to resources (DiMaggio & Powell, 1983). The study of Cho & Patten (2007) found legitimacy theory to show environmental

reporting as a function of the intensity and connectedness of societal and political pressure that the firms face with respect to its environmental performance. Forced by this pressure, the companies try to publish advanced environmental related information. The results of more recent studies like that of Kuo & Chen (2013), found that environmentally-sensitive companies can significantly improve their environmental legitimacy by publishing CSR information. While companies with higher prior environmental legitimacy tend to be more active in environmental reporting. Hence, obtain better environmental legitimacy in the next period (Kuo & Chen, 2013). Committed social responsibility reporting practices are often appreciated as corporate conduct. Involvement of the companies in such voluntary strategies fits within good practices of corporate governance since it allows the firm to gain legitmacy and enhance its economic growth in long run. Any corporate behavior that exceeds the societal expectation will in turn benefit the firm financially in the long run. There are limited studies exploring the relationship between voluntary environmental disclosure and firm value in the light of legitimacy theory. Singh, et al., (2017) presents that those companies with enhanced community relations by providing credible disclosure information is expected to have a higher firm value through improved reputation and greater legitimacy. Also, Barkemeyer (2007) identified legitimacy theory to detect the determinants of disclosure (social and environment) of the company and provides insights on what motives the disclosure practices and how it maximizes profits and firm value.

With respect to the cost of capital and the theory of legitimacy, the study by Gana & Dakhlaoui (2011) showed a positive association with social disclosure level of the

company. On the contrary, a significant nonlinear relationship was depicted between disclosure index and the future cost of equity. When a company explicitly legitimizes its activities, it is interpreted as a positive sign that optimizes the value of the firm and reduces its cost of capital (Gana & Dakhlaou, 2011).

3.1.3 Stakeholders Theory

According to Gray, et al., (1995), stakeholder theory and legitimacy theory are derived from social-political theory. The term "stakeholder theory" was first used by Ansoff (1965) in the context of a corporate concern. Freeman (1984) defined stakeholders as “any group or individual who can affect or is affected by the achievement of an organization’s objectives’. The primary idea behind the theory is that any given firm should consider balancing the conflicting demands of various stakeholders they have (Wang, 2016). The theory suggests that the business entity is more accountable to its stakeholders than its capital providers (Mbekomize & Wally-Dima, 2013). Freeman (1983) and Ullmann (1985) inculcated the stakeholder’s theory into CSR model of stakeholder management. The theory has been applied to environmental reporting studies trying to explain the motive behind corporate reporting behaviors (Sengupta, 1998). Environmental reporting is an established way of meeting the needs of a company’s stakeholders and is a crucial tool of communication that shapes the stakeholder’s views and expectations of the corporate’s environmental responsibility (Gray, et al., 2001; Huang & Kung, 2010). According to Sass (2008) consumers associate positively with companies that are more environmentally responsible and hence tend to be more loyal customers to those companies (Sass, 2008). This study shows that how the choice of

consumers, one of the most important group in the stakeholder's team relies on the environmental reputation of the company. And this is possible only when the firm is disclosing details regarding their environmental commitment to the stakeholders. It also shows that environmental information disclosure can be an effective and efficient method for companies to "promote" themselves. In addition, environmental disclosure can be considered as a technique to attract the stakeholder's support and approval or to divert their disapproval and dissatisfaction (Gray, et al., 1995).

With regards to the firm's economic benefits from ED, the stakeholder theory supports the probable relationship between firm value and the level of environmental reporting (Wang, 2016). The theory supports that, if a company issues credible social and environmental reports to the investors this will decrease the prevailing uncertainly regarding the social responsibility practices of the company and thereby enhancing the perceived firm prospects. This in turn will reward the company with improved firm value (Wang, 2016; Spence & Gray 2008). The study of Spence & Gray (2008) found that in most cases, financial incentives acts as primary incentives for companies to publish social and environmental reports. Issuing these reports provide many non-financial gains to stakeholders and contribute immensely to increase shareholder value. Over the years the number of companies that publish environmental reports have increased eminently as it enhances investment strategies and shareholder value (Kercher, 2007).

Matsumura, et al., (2014) and Ioannou & Serafeim (2015) found positive correlation between ED and firm value. Matsumura, et al., (2014)identified the firm value median to be much higher for corporations those issue the carbon emissions reports

compared to firms which do not report it to the stakeholders. Similarly, stakeholder theory also lays the foundation to the relationship between a firm's social and environmental reporting activities and its cost of capital (Lang & Lundholm, 1996; Botosan, 1997; Sengupta, 1998; Botosan & Plumlee, 2000; Plumlee, et al., 2015). For instance, studies provide evidence that those firms with a higher cost of equity capital in the former year will tend to publish more social and environmental information in the present year in order to attract more investors. Correspondingly, those companies that provide superior environmental performance reports will subsequently have lower cost of equity capital after the issuance of the environmental disclosure reports (Lang & Lundholm, 1996; Plumlee, et al., 2015). Similarly, with respect to the cost of debt, in the study of Sengupta (1998), it was depicted that companies with more overall disclosure quality ratings were benefited by having a lower effective interest rate to raise funds through debt financing. With the release of ED reports the uncertainty prevailing about the company diminish, thereby making the company look more credible. Hence, making it easier and cheaper to acquire finance (Lang and Lundholm, 1996; Plumlee, et al., 2015).

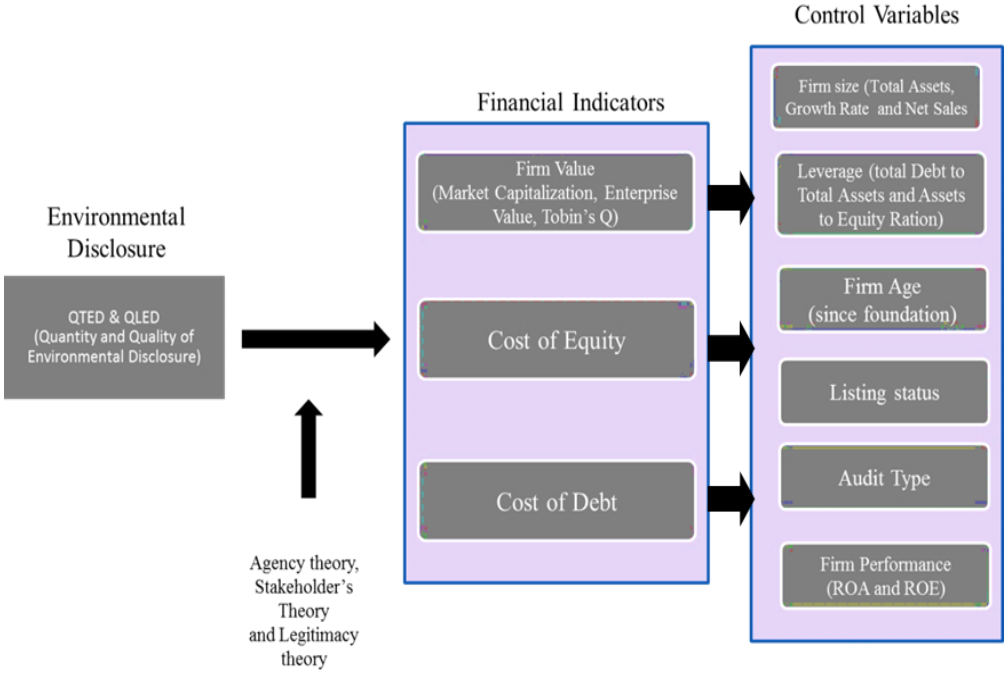

Figure 2 *Theoretical Framework*

This research relies on two widely used social-political theories; the legitimacy theory and stakeholder's theory and one strict economic policy, i.e., agency theory in order to explain the significance of ED in the corporate world. Environmental disclosure is one of the most commonly used method to communicate the entity's contribution to the society. Thus it is vital to understand the quality and usefulness of the disclosed information. The aforementioned theories assist in understanding the prior literature in the area of environmental reporting using well established academic philosophies. Based on the theoretical background, this study explains the quantity and quality of ED

practices and

its relationship with corporate financial indicators (firm value and cost of capital). The relationship (ED and financial variables) is tested combining for a set control variables, i.e., firm size (assets, growth rate and net sales), leverage (total debt to assets and assets to equity ratio), firm age, listing status, audit type and firm performance (ROE and ROA).

3.2 Hypothesis Development

The literature discussing the relationship between ED and firm value provides a wide variety of empirical results. The relationship extends from positive to negative to no relationship between the variables. Theoretically, agency theory explains the enhancement in the firm value with respect to reduced agency cost. Legitimacy theory and stakeholder's theory can also put into justifying the link between ED and firm value. The former theory improves firm value by legitimizing its corporate behavior. Adhering to societal pressures, the firm discloses more ED. This in turn will benefit the company with regards to improved profits and value maximization. The latter suggests that ED is a way of providing superior quality corporate information to its stakeholders. Increase in disclosed information will reduce the uncertainty regarding the social responsibility practices of the company; thereby, enhancing the perceived firm prospects and firm value. Yet, prior research fails to agree upon significant empirical evidence explaining the association between environmental disclosure and firm value. Hence, combining evidence from theory and literature, the following hypotheses can be tested,

H1: There is a significant positive relationship between environmental disclosure and firm value.

H1a: There is a significant positive relationship between quantity (extent) of

environmental disclosure and firm value.

H1b: There is a significant positive relationship between quality of environmental disclosure and firm value.

Similar to the studies of ED and firm value, the literature results show mixed directions and magnitudes between the ED and cost of capital figures (Richardson & Welker, 2001; Cormier and Magnan 2007; Aerts, et al., 2008; Dhaliwal, et al., 2011; Pled and Latridis, 2012). With regards to the theory, agency theory primarily suggests that with improved ED publications, the firm reduces agency cost, thereby tend to attain cheaper capital (Fama & Miller, 1972; Lundholm, 1996; Plumlee, et al., 2015). Nevertheless, due to varied empirical results, the relationship lacks a clear consensus on the significance and direction of ED and cost of capital. Hence, the following hypothesis is tested.

H2: There is a significant negative relationship between environmental disclosure and cost of equity.

H2a: There is a significant negative relationship between quantity (extent) of environmental disclosure and cost of equity.

H2b: There is a significant negative relationship between quality of environmental disclosure and cost of equity.

H3: There is a significant negative relationship between environmental disclosure and cost of debt.

H3a: There is a significant negative relationship between quantity (extent) of

environmental disclosure and cost of debt.

H3b: There is a significant negative relationship between quality of environmental disclosure and cost of debt.

CHAPTER 4: METHODOLOGY

The aim of this chapter is multifold. First, the research design employed to measure the study constructs are briefed. Second, the sample selection process, retrieval and reasoning. This leads to the third section, the research variables measurement is discussed at length; independent variable, ED using content analysis, dependent variable (financial performance) and control variables using Bloomberg database. Correspondingly, this chapter is followed by the empirical results section.

4.1 Research Design

This study used content analysis as a technique to quantify and qualify the environmental reporting practices of the sampled companies. Content analysis is a research tool focused on the actual content and internal features of the data. It is used to determine the presence of certain words, concepts, themes, phrases, characters or sentences within text or texts and to quantify this presence in an objective manner (Palmquist, 1990). There are two ways of applying content analysis method to measure environmental disclosures.

One way to measure the level of environmental reporting that is disclosed by companies in their annual or CSR or environmental report is by using count words, sentences and number of pages that is related to environmental subject (Gray, et al., 1995; Deegan & Gordon, 1996; Hackston & Milne, 1996; Suttipun & Stanton, 2012). The second method is to develop a content analysis index which will provide the

opportunity to measure both quantity and quality of ED. This study has adopted the second method by instrumenting an index scoring technique (using sentences). A Scoring method using content analysis is one among the most widely used disclosure analysis technique to analyze environmental disclosure. Moreover, it has become a primary technique in several studies to analyze the social and environmental disclosure (Deegan & Rankin, 1999; Guthrie, et al., 2004 Kaya & Yayla, 2007). The ED items included in the index and the scoring criteria (such as monetary or non-monetary, quantitative or qualitative, hard or soft etc.) vary from one research to another. These methods have widely used by Wiseman, 1982; Al-Tuwaijri, et al., 2004; Clarkson, et al., 2008; Zeng, et al., 2012; Du, et al., 2013; Dong, et al., 2014; He & Loftus, 2014; Cho, et al., 2015.

4.2 Sample

GCC has grown as a global hub for the production of chemicals and petrochemicals. Over the last few decades, the chemical and petrochemical industry has been expanding tremendously with a Compound Annual Growth Rate (CAGR) of 12 % (GPCA, 2012). The GCC chemical industry represents the second largest contributor of the manufacturing sector in the region. Nevertheless, with higher contribution from these environmentally sensitive industries comes the higher burden of social and political pressure for environmental reporting and protection measures. Moreover, a study undertaken by Global Economy and Development Program reveals that Qatar, UAE, Kuwait and Bahrain are among the highest per capita carbon dioxide (CO_2) emitters in the world (Meltzer, et al., 2014). Alarmingly, those industries that contribute to this situation are the ones functioning in the petrochemical units, cement manufacturing

plants, gas flaring and utilities sector. Also, most GCC economy has dedicated vision statements for their respective environmental safeguard strategic plans (Qatar MDPS (Ministry of Development Planning and Statistics), 2008); UAE Cabinet, 2010; Saudi Gazette, 2016). Yet, do those companies that contribute the most harm to ecological safety conform to environmental protection? In addition, most GCC ED studies are based on the oil industry. Whereas, the subsidiary sector, chemical and petrochemical industry that contribute hugely to the region's economy and are as environmentally sensitive are conveniently forgotten. This study sampled the listed chemical and petrochemical companies (as categorized from the database of *GulfBase* as on January 2015) to examine the extent and quality of environmental reporting prevailing in the region for year the 2010 and 2015. Most of the empirical studies on CSR and ED depend on company annual reports, which are considered as the most important tool used by companies to communicate with their stakeholders (Abu-Baker & Naser, 2000; Ahmed & Sulaiman, 2004; Zubek & Loverove, 2009). Based on the knowledge from prior studies, it was noted that annual report of GCC listed companies contained limited disclosure on corporate environmental factors. Hence, this study used both annual and CSR reports (or other environmental reports) to score the ED variables. The initial size of the sample constituted a total of 161 listed companies in the chemical and industrial sectors. Unavailability of published annual reports and subsequent relevant reports like CSR reports have trimmed down the sample size to 71 companies. 71 listed companies in six GCC countries are distributed as follows: Saudi Arabia (23), UAE (10), Kuwait (15), Bahrain (3), Oman (12) and Qatar (8). The target period for collecting and analyzing

annual reports and CSR reports in this study are years 2010 and 2015. One of the primary motives of the study is to assess the ED (quantity and quality) across different time periods, hence the two chosen years, i.e., 2010 and 2015 have been selected due to the following reasons. Annual reports of 2011 and 2012 have excluded from the sample because of the Arab Spring which has affected on oil sector in many Arab countries (Eljayash, et al., 2013). Consequently, it affected the operations of its subsidiary, chemical sector in GCC too (Hvidt, 2013). In addition, most companies in the Arab region started publishing their annual reports on websites or other online sources only in the recent times. Whereas in western companies, the soft copies of annual reports were easily accessible since the last decade (Eljayash, et al., 2013). Additionally, 2015 annual reports and CSR reports were taken with respect to the most recent available corporate report of the company. Annual reports were available for many companies for the year 2016, but not the CSR reports. Since companies do not publish CSR report as fast as they publish annual report after the year end, the study opted to choose the published corporate reports of year 2015. Due to time constrains a longitudinal study was not possible. Also, one of the primary objectives of the study was to identify the ED trend in the GCC region. Hence, it was important to take considerable time gap between the years studied. Hence, corporate reports of years 2013 and 2014 are excluded.

Table 1

Listed Chemical and Petrochemical Companies in GCC

Country	**Number of target companies**	**% of Sample Population**	**Number of selected companies**	**Retrieval Rate (%)**
Saudi Arabia	49	30.43%	26	53.06%
United Arab Emirates	16	9.94%	7	43.75%
Kuwait	42	26.09%	18	42.86%
Bahrain	3	1.86%	2	66.67%
Oman	42	26.09%	10	23.81%
Qatar	9	5.59%	8	88.89%
Total	161	100.00%	71	44.10%

Table 1 displays the total number of targeted companies in the respective industry for which published annual reports are retrieved from their websites. From the Table 1, it can be noted that Bahrain has the smallest number of companies listed in the Chemical and Petrochemical industry sector. It has three companies, i.e., 2% of the total sample

population. Among them, only two companies provide annual reports to analyze for this study. Saudi Arabia on the contrary has the highest number of listed companies in the chosen industry. A total of 49 companies, constituting slightly more than 30% of the total sample population. Qatari listed companies in the studied sector have the most availability of published annual reports in both the years. The availability rate of the annual report for the years 2010 and 2015 was least in Oman. With a total of 42 listed chemical and petrochemical companies in the country, only 24% (10 companies) among them was available for the study. The total retrieval rate was 44.10% (71 companies).

4.3 Variables of Measurement

4.3.1 Environmental Disclosure (Independent Variable)

The index instrumented for this study is an all-inclusive scoring table consisting of five major categories with sub-indicators totaling to a sum of 22 items to cover vital environmental information disclosed in the annual and CSR reports. Since a simple combination of some random disclosure indexes will fail to capture the contextualization of environmental reporting, the disclosure index used for the study is developed from reviewing ED index of prior studies and items from reports of international environmental institutions. Disclosure items have been selectively chosen from various former studies including Hongium and Xiaobo (2010), Al-Tuwaijri et al., (2004) Eljayash, et al., (2013), Khasharmeh and Desoky (2013) and Wang (2016). Also, Sustainability Reporting Guidance 2016 IPIECA has been referred to as a benchmark for ensuring an inclusive and wider horizon of disclosure areas.

The ED indicators assessed include: I. Environmental Strategic Profile (4), II.

Environmental Governance System (4), III. Environmental Investments (4), IV. Environmental Performance Indicators (6) and V. Environmental credibility (4). The first major category, I. Environmental Strategic Profile includes four ED items pertaining to generic strategic environmental variables regarding environmental policy, training and campaigns conducted by the company, organizational environmental compliances and availability of CSR or environmental reports. Secondly, II. Environmental Governance System. This section scores for the firm's environmental governance practices, like the existence of personnel and department to solve environment related concerns, environmental code of ethics practiced in the company, preventive measures taken to protect the ecological surrounding and environmental auditing. The third category of measuring variable, III. Environmental Investments involves corporate details on the firm's environmental spending, financing for latest environmental equipment and so on. Furthermore, IV. Environmental Performance Indicators has six sub-items scoring for information like environmental accidents, carbon dioxide or greenhouse gas emissions, water effluent, waste disposal and recycling activities prevailing in the company. Lastly, V. Environmental credibility measuring the overall quality of environmental information provided in the firm's annual or CSR report, environmental awards received by the company in the past year, mentioning of national environmental policies and protocols in the corporate published reports and details regarding the firm's compliance to international standards (for instance, ISO, GRI).

Since, the study measures quantity (i.e. extent) (QTED) and quality (QLED) of the environment disclosure, different scores are assigned to each disclosure variable

using. Consistent with former studies (Ettredge, et al., 2002; Aly & Simon, 2008; Desoky, 2009), the quantity of ED is measured using an un-weighted score, which treats all items equally within a dichotomous procedure wherein an item scores (+1) if it is disclosed and (0) if otherwise. Thus, a total quantity (QTED) of ED for a given company varies from zero to 22. Furthermore, while measuring the quality, the greatest weight assigned is (+3) to monetary disclosures of the environmental items, and assigns the highest weight (+2) to quantitative. Any general disclosure receives the lowest weight (+1). Finally, firms that do not disclose information for a given environmental indicator receives a score of zero (Al-Khadash, 2003; Ahulu, et al., 2010; Buniamin, et al., 2011). Hence, the total score of each company may receive the highest quality (QLED) of environmental disclosure of 66, while the lowest quality score is zero. An index method will allow us to capture different types of information that is comparable across sample firms in terms of relevance and specificity. Second, it helps to avoid irrelevant or redundant disclosures to impact the measure.

4.3.2 Economic Performance (Dependent Variable)

Previous studies attempted to explain corporate environmental reporting and its impact on various firm financial indicators. Innumerable accounting formulas and ratios are used to measure a firm's financial position. This study uses two sets of economic variables based on the prior researche in order to examine the relationship between ED and firm's economic performance. First, the Firm Value (F_VAL) measurements in terms of Market Capitalization (MC), Enterprise Value (EV) and Tobin's Q (TQ). Secondly, Firm's Cost of Capital (C_CAP) using weight and cost of Equity (EW and EC) and Debt

(DW and DC) in addition to the Weighted Average Cost of Capital (WACC). The dependent variables were accessed from Bloomberg for the period of the first quarter (Q1) ending 31st March for years 2011 and 2016.

4.3.2.1 Firm Value (F_VAL)

F_VAL in the study is measured using Market Capitalization (MC), Enterprise Value (EV) and Tobin's Q (TQ). As discussed in the literature review chapter, there are many studies on the relationship between ED disclosure and firm value (Spence & Gray 2008; Matsumura, et al., 2014; Calace, 2014). This study uses market capitalization (MC) (Manaf, et al., 2006; Calace, 2014; Dammak, 2015), Enterprise Value (EV) (Clarkson, et al., 2011; Yang & Tang, 2013; Hang & Chunguang, 2015) and Tobin's Q (TQ) (Ragothaman & Carr, 2008; Olayinka & Oluwamayowa, 2014; Setiadi, et al., 2017) as dependent variables of ED. MC it is the market value of a company's outstanding shares. It is calculated by multiplying the total number of shares outstanding with the stock price. The study of Calace (2014) identified that the issuance of a GRI referenced disclosure report even with limited disclosure (C and B GRI Application Levels) causes a positive effect on the market capitalization of the company. Enterprise Value is defined as the sum of Market Capitalization, Preferred Equity, and short- and long-term interest-bearing debt, less cash and equivalents. Also, Tobin's Q is the ratio between the market value of equity and book value of long-term liabilities to the book value of total assets (Lindenberg & Ross, 1981). A Tobin's Q value of greater than one indicates that investors access the value of assets as being higher than the replacement costs of the

same assets (Lee & Tompkins, 1999).

Variable		**Proxy**
MC	=	Multiplying the shares outstanding by the price per share
EV	=	The sum of Market Capitalization, Preferred Equity, and short- and long-term interest-bearing debt, less cash and equivalents.
Tobin's Q	=	The ratio between the market value of equity plus book value of long term liabilities to book value of assets

4.3.2.2 Cost of Capital (C_CAP)

Cost of Capital (C_CAP) is measured in terms of Equity Cost (CoE) (Dejean & Martinez, 2009; Pled and Latridis, 2012; Mohamed & Faouzi, 2014), Debt Cost (CoD) (Sengupta, 1998; Xuan et al., 2014) and Weighted Average Cost of Capital (WACC) (Cheynel, 2013; Bonetti, et al., 2015; Abd Rahman, et al., 2017). The primary explanation for the cost of capital is, it is the cost an entity pay to raise finance. This study uses both equity and debt costs. Cost of debt is the overall average rate an organization pays on all its debts, generally consist of bonds and bank loans. Similarly, a firm's cost of equity refers to a shareholder's required rate of return on an equity investment or the compensation the market demands in exchange for owning the asset and bearing the risk of ownership. Once both the values are identified, the weighted average cost of capital (WACC), can be calculated. WACC can be used as a measure of

discount rate for a project's projected free cash flows to the firm.

Variable		**Proxy**
CoE	=	The required rate of return on a particular investment
CoD	=	Cost of debt is the overall average rate an organization pays on all its debts
WACC	=	The expected return on a portfolio of all the firm's securities (equity and debt)

4.3.3 Control Variables

Control variables for the regression model have been selected based on prior studies of corporate environmental disclosures. Based on the ED studies reviewed, most widely used control variables includes firm size, leverage ratios, future cash flows, audit type, firm age, book value of market capital and listing status. For the purpose of this study the following control variable has been chosen to investigate the relationship between ED and the economic variables. Financial figures of firm size, leverage ratios, listing status and firm performance as retrieved from Bloomberg database. On the other hand, audit type information is taken from the firm annual report and firm age from the corporate website.

Drawing on previous studies the following control variables have been chosen; firm size (Trotman & Bradley, 1981; Cowen, et al., 1987; Cormier & Gordon, 2001 Zeng, et al., 2012), Audit type – (Welbeck, et al., 2017), Leverage (Spicer, 1978; Fama &

French, 1992; Akrout & Othman, 2013), Firm age – (Aerts et al. 2006; Welbeck, et al., 2017), Listing status – (Cormier & Gordon, 2001; Zeng, et al., 2012), firm performance – (Huang & Kung, 2010; Schiager & Haukvik, 2012).

Control Variables	**Proxy**
Firm size:	Growth rate, Net sales, Total Assets
Audit Type:	Big Four or not Big Four
Leverage:	Total Debt to Total Assets, Assets to Equity
Firm age:	Since the year of foundation
Listing status:	Single or multiple (cross) listed
Firm Performance:	Return on Assets (ROA) and Return on Equity (ROE)

4.3.3.1 Firm Size (F_SIZ)

Measured in terms of Net Sales, Total Assets and Growth Rate

Net Sales = $\frac{Net\ Income}{Average\ Total\ Assets}$

Total Assets = The total of all short and long-term assets as reported on the balance sheet

Growth Rate = $\frac{Trailing\ 12\ month\ net\ sales\ for\ the\ current\ period - Trailing\ 12\ month\ net\ sales\ for\ the\ last\ period}{Trailing\ 12\ month\ net\ sales\ for\ the\ last\ period}\ X\ 100$

A study by Suttipun and Stanton (2012) show that larger firms disseminate more on the environmental issues and communicated using the annual report. Firm size is a commonly used control variable in the environmental reporting studies. Most former studies have found a positive association between firm size and the degree of environmental disclosure (Trotman & Bradley, 1981; Cowen, et al., 1987; Deegan & Gordon, 1996; Hackston & Milne, 1996; Adams, et al., 1998; Cormier & Gordon, 2001; Branco & Rodrigues, 2008; Zeng, et al., 2012;). This relationship is often based on the legitimacy theory. For instance, the larger the company is, the more business area it covers. Hence, by default, it will have a greater impact on both economic and natural environment. Thus, larger companies are likely to be more pressurized by the legal authorities and social groups with regard to higher disclosure expectations in general. In addition, large corporations can afford to indulge in spending more resources on environmental initiatives and enhanced environmental reporting. Consistent with previous studies total assets, net sales and growth rates (Hongium & Xiaobo, 2010) are used as control variables in this study.

4.3.3.2 Firm Leverage (F_LEV)

Using Total Debt to Total Assets and Assets to Equity

$$\text{Total Debt to Total Assets} = \frac{Net\ Income}{Average\ Total\ Assets}$$

$$\text{Assets to Equity} = \frac{Total\ Assets}{Total\ Shareholders\ Equity}$$

The leverage ratios, firms rely on a combination of finance in terms of owners' equity and debt to fuel their business. A leverage ratio is a type of financial measurement that explains how much part of the firm's capital comes in the form of debt (loans) or assesses the capability of the company to meet its financial obligations. From the perspective for the stakeholder, there is an expectation that highly- leveraged companies will disclose more information in their annual reports as a business tactic in order to make the business look more attractive to financial institutions to raise more funds (Barako, et al., 2006). With respect to this theory, few studies have concluded a positive link between leverage and environmental disclosure (e.g. Naser, et al., 2006; Parsa & Kouhy, 2008). Leverage is measured as the ratio of total debt to total assets Social Reporting by Companies Listed on the Alternative Investment Market (Hongium and Xiaobo, 2010) and assets to equity ratio. It is also supported by agency theory. For example, the theory proposes that highly leveraged companies would disclose more information in order to satisfy the needs of debenture holders and trustees.

4.3.3.3 Firm Performance (F_PER)

Using Return on Asset (ROA) and Return on Equity (ROE)

$$\text{ROA} = \frac{Net\ Income}{Average\ Total\ Assets}$$

$$\text{ROE} = \frac{Net\ Income}{Average\ Total\ Equity}$$

Firm performance is measured using a wide variety of ratio analysis and other qualitative indicators. Few of the commonly used financial performance measures are as follows: Return on Assets (ROA), Return on Equity (ROE), Earnings per Share (EPS), Return on Investment (ROI), Net/Gross Profit Margin (PM), Return on Sales (ROS), Operating Cash Flow (OCF) etc. In this study firm performance is measured using ROA and ROE. ROA is an indicator of how profitable a company is relative to its total assets. Similarly, ROE is an accounting-based measurement and measures the efficiency of a firm in generating profits from each unit of its owner's equity. Former studies have mixed results while identifying the relationship of ROA and ROE to ED. Firm performance measures like ROA and ROE are rarely used as control variables and are limited to studies of Hongium & Xiaobo (2010) and Huang & Kung (2010).

4.3.3.4 Firm Audit Type (A_TYP)

Firm audit type identifies whether the company is audited by one of the Big Four auditing firms or not. In cases where the company is audited by KPMG, Ernst & Young (EY), Deloitte or PricewaterhouseCoopers (PWC) a score of one is given and otherwise the company's A_TYP is marked as zero (Welbeck, et al., 2017).

*4.3.3.5 Firm age (F_AGE***)**

In terms of years since the incorporation of the company (Aerts et al., 2006; Welbeck, et al., 2017).

4.3.3.6 Listing Status

The historical information related to the cross-listing status of the company is also retrieved. Cross listing or multiple listing is a comparatively new feature that the stock market of GCC is just getting on to (Haniffa & Cooke, 2005; Espinoza, et al., 2010; Bahlous, 2013). With regards to theory, agency theory predicts that a company's listing status have noticeable impact on the agency costs (including cost of capital).

CHAPTER 5: RESULTS AND DISCUSSION

This chapter discusses the empirical findings of the study. The data is first tested for reliability, validity and normality. Descriptive statistics are summarized for all the research variables. In addition, the following section provides a brief overview of the general figures and characteristics with respect to the quantity (QTED) and quality (QLED) of corporate environmental disclosure practices among the listed GCC chemical and petrochemical industries for the years 2010 and 2015. Trend test between the two sampled years and sampled countries are investigated. The independent variables (ED) and control variables are tested for multicollinearity. Further discussions and interpretations of the regression results examining the relationship between ED and firm value and ED and cost of capital are also presented.

5.1 Reliability Test

Table 2

Reliability Statistics

Variables of Measurement	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
QTED	.851	.865	2
QLED	.745	.785	2

The reliability test performed in SPSS confirms the consistency between multiple measurements corresponding to a particular variable. The test has been performed for ED variables (QTED and QLED) and the results satisfy the generally acceptable Cronbach's alpha of 0.70 level. Cronbach's alpha of QTED is 0.851 and QLED is .745. Hence, endorsing the variables used to measure quantity and quality of ED are significantly confirming to the reliability of the total ED construct.

5.2 Validity of Data

Table 3

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.534
Bartlett's Test of Sphericity	Approx. Chi-Square	406.271
	Df	6
	Sig.	0.000

The validity of the test is conducted using KMO & Bartlett's Test. The test measures sampling adequacy of the study. The KMO ranges from 0 to 1, the results in Table 3 shows a KMO of 0.534 with a significance of 0.000 P-value confirming the adequacy of the data. Also, Bartlett's Test of Sphericity (Approx. Chi-Square 406.271) relates to the significance of the study and thereby shows the validity and suitability of the variables collected to represent the problem addressed in the study.

5.3 Normality Testing

Kruskal-Wallis test is performed to test the normality of the data. It is shown that the data is not normally distributed with most variables loading to an Asymp. Sig. (2-tailed) of less than P-value 0.05. (Refer: Appendix C). The results also displayed slight normality among the Total Debt to Total Assets variables and firm age indicators. Hence, the data has been normalized using Van der Waerden's Formula.

5.4 Descriptive Analysis

5.4.1 Descriptive Statistics - Dependent Variable (Firm Value and Cost of Capital)

Table 4

Descriptive Statistics - Dependent Variable (Firm Value and cost of Capital)

DV	N	Mean	Median	SD	Range	Min.	Max.
2011 (Q1)							
MC	69	3123	639.60	10528	84193	0.00	84193
EV	69	8054	704.90	26143	144900	0.00	144900
TQ	71	1.32	1.28	0.76	5.27	0.00	5.27
WACC	71	9.05	8.10	4.16	15.60	2.60	18.20
CoE	71	11	10.70	5.05	20.90	2.20	23.10
CoD	71	2.68	2.70	1.40	4.80	0.00	4.80
2016 (Q1)							
MC	69	2529	492.50	7746	59865	0.00	59865
EV	69	4564	647.00	12691	72718	0.00	72718
TQ	71	1.42	1.03	2.33	20.30	0.00	20.30
WACC	70	7.44	6.55	4.54	29.20	1.70	30.90
CoE	71	9.98	10.40	5.32	30.90	0.00	30.90
CoD	71	1.42	1.60	0.77	3.10	0.00	3.10

Table 4 summarizes the descriptive statistics of the financial variables used in the study as the dependent variable. Corresponding to the firm value (F_VAL) measurements, the mean of MC has decreased from US$3123.54 in the first quarter of 2011 to US$2529.58 in 2016. Similarly, EV has also decreased from US$8054.97 to US$4564.01 over the collected time periods. The ratio of TQ slightly increased from 1.32 in 2011 to 1.42 in 2016. The fall in most financial variables in the first quarter of 2016 compared to 2011 is primarily caused by the severe oil price crisis that stuck the international markets earlier that year (Husain, et al., 2015). In addition, cost of capital (C_CAP) variables also exhibited probable change over the years. The WACC fell from 9.05 to 7.44, CoE from 11.54 to 9.98 and CoD from 2.68 to 1.42. The drop in these variables shows the decrease in cost of financing that these companies experience over the sampled years.

5.4.2 Descriptive Statistics - Control Variable (Frim Size, Leverage, Listing Status, Firm Age, Audit Type, and Performance)

Table 5

Descriptive Statistics - Control Variable (Frim Size, Leverage, Listing Status, Firm Age, Audit Type, and Performance)

CV	N	Mean	Median	Std. Dev.	Range	Min.	Max.
2011 (Q1)							
TA	69	4598.9	749.00	12897.44	89104.50	24.50	89129.00
G.RATE	62	16.53	9.54	39.13	241.03	-46.70	194.33
NET. SALES	68	424.6	62.90	1534.97	11965.40	0.00	11965.40
TD.TA	69	26.33	25.03	19.87	66.89	0.00	66.89
AE	71	2.22	1.84	1.29	6.11	1.01	7.12
Listing Status	71	0.04	0.00	0.20	1.00	0.00	1.00
Firm Age	71	23.49	22.00	14.25	53.00	2.00	55.00
Audit Type	71	0.62	1.00	0.49	1.00	0.00	1.00
ROA	71	6.97	5.24	7.39	45.78	-4.98	40.80

ROE	71	12.45	9.70	11.31	64.52	-16.35	48.17
2016 (Q1)							
TA	69	5902.2	975.00	16541.38	98758.50	28.50	98787.00
G.RATE	67	-1.81	-2.53	23.68	160.15	-52.12	108.03
NET. SALES	69	350.08	87.40	1108.87	8917.40	5.30	8922.70
TD.TA	70	26.11	23.75	19.98	72.41	0.00	72.41
AE	71	3.01	1.60	6.06	48.42	1.06	49.48
Listing Status	71	0.04	0.00	0.20	1.00	0.00	1.00
Firm Age	71	28.49	27.00	14.25	53.00	7.00	60.00
Audit Type	71	0.68	1.00	0.47	1.00	0.00	1.00
ROA	71	5.47	4.64	7.50	42.97	-16.27	26.70
ROE	70	6.50	9.91	22.01	154.27	-124.33	29.94

In the above Table 5 descriptive statistics of the control variables used in the study are listed. The study uses eight financial indicators and two firm features (firm age and audit type) as controlled factors in order to analyze the probable relationship between ED and selected financial variables (firm value and cots of capital). It can be noted that

the mean of the following variables including total assets (TA) and asset to equity ratio (AE) has increased over the study years. On the other hand, the mean US dollars have decreased for growth rate (G.RATE), net sales (NET.SALES), total debt to total assets ratio (TD.TA), ROA and ROE. The listing status of the companies remain unchanged between 2010 and 2015. The audit type slightly changed from 0.62 to 0.68 showing more companies shifting to the Big 4 for auditing service.

5.4.3 ED Analysis

The following section provides in-depth analysis of descriptive statistics of the independent variable – ED. Tables below comprehends the ED in terms of total mean and scores for QTED and QLED in for 2010 and 2015.

5.4.3.1 Yearly Analysis (Mean: QTED & QLED)

Table 6

Descriptive Statistics – Independent Variable (Mean: QTED & QLED)

2010					**2015**					
QTED 2010					QTED 2015					% Change in
Mean	Max	Min	Range	Std. Dev	Mean	Max	Min	Range	Std. Dev	QTED (2010-2015)
0.22	0.82	0.00	0.82	0.24	0.32	1.00	0.00	1.00	0.30	**45.59%**
QLED 2010					QLED 2015					% Change in
Mean	Max	Min	Range	Std. Dev	Mean	Max	Min	Range	Std. Dev	QLED (2010-2015)
0.11	0.58	0.00	0.58	0.15	0.18	0.89	0.00	0.89	0.22	**69.43%**

Table 6 reveals the total ED mean in terms of QTED and QLED. The total mean of the extent (QTED) of ED has increased from 0.22 to 0.32 representing an enhancement of 46% between 2010 and 2015. Likewise, QLED has improved by 70% from 0.11 in 2010 to 0.18 in 2015. The value of the maximum QTED mean has boosted to 1.00 from 0.82 and QLED mean to 0.89 from 0.58. The descriptive statistics also shows that the standard deviation increases with the ED mean over the years. This explains how much the individual company ED (QTED and QLED) mean varies from the total mean value of QTED and QLED respectively.

5.4.3.2 Yearly Analysis (Scores: QTED & QLED)

Table 7

Descriptive Statistics - Independent Variable (Scores: QTED & QLED)

ED Indicators	Year 2010								Year 2015							
	QTED				QLED				QTED				QLED			
	$\bar{X}$	SD	Min	Max	$\bar{X}$	SD	Min	Max	$\bar{X}$	SD	Min	Max	$\bar{X}$	SD	Min	Max
I. Environmental Strategic Profile (4)	0.4	0.4	0	1	0.5	0.7	0	3	0.5	0.4	0	1	0.7	0.8	0	3
I.1 Environmental Policy of the Organization	0.6	0.5	0	1	0.8	0.8	0	3	0.7	0.4	0	1	1	0.9	0	3
I.2 Environmental education, training, campaigns and	0.4	0.4	0	1	0.6	0.9	0	3	0.4	0.5	0	1	0.8	1	0	3

conferences																
I.3 Compliance with environmental regulations	0.5	0.5	0	1	0.7	0.8	0	3	0.7	0.4	0	1	0.9	0.9	0	3
I.4 Separate environmental/sustainability report	0.01	0.1	0	1	0.0	0.2	0	3	0.1	0.2	0	1	0.2	0.6	0	3
II. Environmental Governance System (4)	0.2	0.4	0	1	0.3	0.6	0	0	0.3	0.5	0	1	0.5	0.8	0	3
II.1 Special department assigned to environmental issues	0.25	0.4	0	1	0.3	0.6	0	3	0.3	0.4	0	1	0.6	0.9	0	3
II.2 Environmental code of ethic and behavior	0.32	0.4	0	1	0.4	0.6	0	3	0.5	0.5	0	1	0.7	0.8	0	3
II.3 Preventive measures/environmental	0.2	0.4	0	1	0.3	0.6	0	3	0.4	0.4	0	1	0.7	0.9	0	3

protection																
II.4 Environmental auditing	0.04	0.2	0	1	0.1	0.3	0	3	0.	0.3	0	1	0.2	0.5	0	3
III. Environmental Investments (4)	0.19	0.4	0	1	0.3	0.6	0	3	0.3	0.4	0	1	0.5	0.9	0	3
III.1 Environment spending	0.27	0.4	0	1	0.4	0.7	0	3	0.4	0.4	0	1	0.7	0.9	0	3
III.2 R&D for environmental enhancement	0.13	0.3	0	1	0.2	0.5	0	3	0.2	0.4	0	1	0.4	0.8	0	3
III.3 Financing for hi-tech environmental equipment	0.25	0.4	0	1	0.4	0.7	0	3	0.4	0.4	0	1	0.6	0.9	0	3
III.4 Green building	0.1	0.3	0	1	0.1	0.4	0	3	0.1	0.3	0	1	0.2	0.6	0	3
IV. Environmental Performance Indicators	0.12	0.3	0	1	0.2	0.6	0	3	0.2	0.4	0	1	0.4	0.8	0	3

(6)																
IV.1 Environmental accidents (spills/leakage and other accidents)	0.11	0.3	0	1	0.2	0.5	0	3	0.2	0.4	0	1	0.5	0.9	0	3
IV.2 Co2 or other (or green house) gas emissions	0.13	0.3	0	1	0.2	0.7	0	3	0.2	0.4	0	1	0.3	0.8	0	3
IV.3 Land Rehabilitation and Remediation	0.07	0.2	0	1	0.1	0.5	0	3	0.2	0.3	0	1	0.3	0.7	0	3
IV.4 Water Effluent	0.13	0.3	0	1	0.2	0.5	0	3	0.2	0.4	0	1	0.4	0.8	0	3
IV.5 fees/penalties related to environmental issues	0.1	0.3	0	1	0.2	0.5	0	3	0.2	0.4	0	1	0.3	0.7	0	3
IV.6 Waste products disposal and recycling	0.18	0.3	0	1	0.3	0.6	0	3	0.3	0.4	0	1	0.4	0.7	0	3

activities

V. Environmental credibility (4)	0.27	0.4	0	1	0.4	0.8	0	3	0.4	0.4	0	1	0.7	0.9	0	3
V.1 Environmental information in the Annual Report	0.41	0.5	0	1	0.5	0.7	0	3	0.5	0.5	0	1	0.8	0.9	0	3
V.2 environmental performance awards	0.23	0.4	0	1	0.4	0.7	0	3	0.3	0.4	0	1	0.5	0.9	0	3
V.3 Following National Environmental Policies	0.07	0.2	0	1	0.1	0.4	0	3	0.1	0.3	0	1	0.2	0.6	0	3
V.4 Reference to certification (ISO Standards, GRI)	0.38	0.5	0	1	0.7	1.1	0	3	0.6	0.5	0	1	1.3	1	0	3
Total	4.77	8.2	0	22	7.0	14	0	66	7.0	9.5	0	22	12.	19	0	66

5.4.3.2.1 Yearly Analysis (Scores: QTED & QLED) – 2010

This part of the discussion draws attention to the scoring of quantity (QTED) and quality (QLED) of corporate environmental disclosure among the sampled companies for the year 2010. The above-mentioned Table 7 provides the descriptive statistics of the mean scores of extent (QTED) of ED using a dichotomous procedure in which an item scores one or zero based on the presence or absence of that particular disclosure item in the annual or CSR report. In addition, the quality (QLED) using weighted scoring method for the year 2010 (item scores between zero to three). The total mean score for QTED and QLED is 4.77 and 7.04 respectively for the year 2010. A closer look at the scores of the major categories and sub items presents that, in the QTED 2010 scoring, the first category of disclosure i.e., (I) Environmental Strategic Profile of the company has the highest average mean score of 0.35 (Refer: Table 7). This means that most companies provide disclosure on this particular item. Similarly, in the QLED scoring (I) Environmental Strategic Profile of the company has the highest disclosure qualitative average mean score of 0.50. The high scores of these particular items compared to others can be explained in the light of how companies conform to basic organizational environmental norms. Thus, most companies involve in general strategic environmental actions like environmental training, campaigns and compliance with ecological regulations, whereas they do not necessarily involve in exhaustive environmental commitments. This can also be a reason for the low mean score of the fourth major category (IV) Environmental Performance indicators having an average mean score of QTED of 0.12 and QLED 0.19.

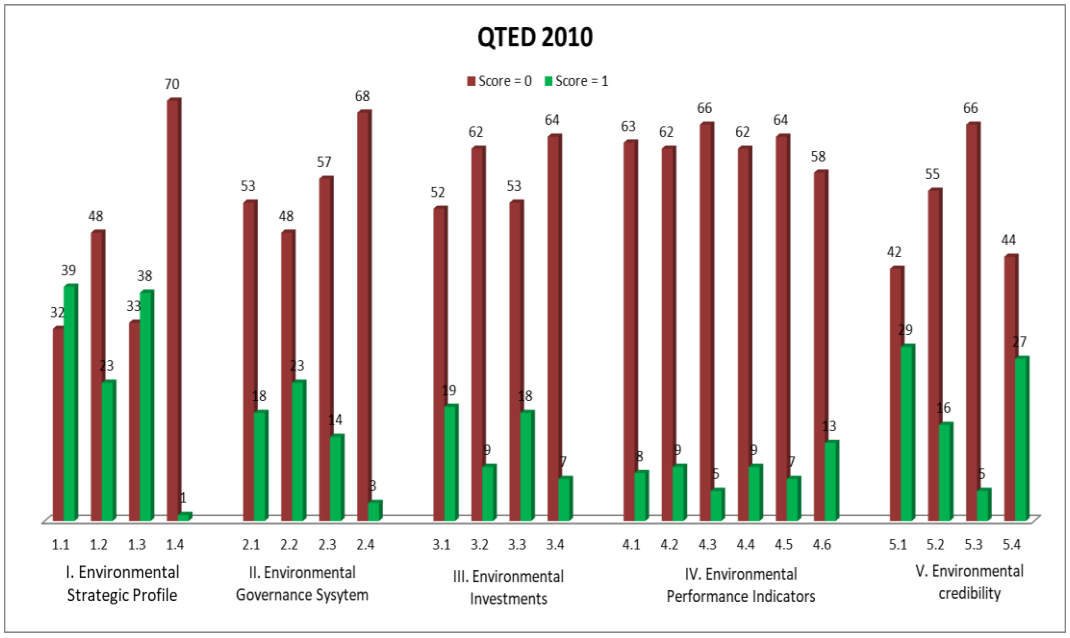

Figure 3 (A) *QTED 2010*

Figure 3 (A) represents the total scoring of QTED 2010. Under the first category of ED, i.e., (I) Environment Strategic Profile of the company, it has been found that 70 out of the sample companies score a zero for the sub-category of publishing separate sustainability report (I.4), representing except one company, none of the sampled companies published a separate CSR report for the year 2010. Referring to the same category, it is also found that most companies, 54.9% of the sample provide some information on environmental policy (I.1) of the company. Showing that majority of the firms adhere to generic corporate environmental practices. The second highest QTED is

provided by companies with respect to disclosing (I.3) compliance to environmental disclosure. It is possible that this might be due to legal pressure and there is a mandatory regulation that follows the publishing of information regarding whether the company adheres to environmental regulations or not. Company disclosure on practice or appreciation of green building (III.4) is also low. Seven companies representing roughly 10 % of the sample mention innovative ecological safeguard techniques like green building. The (IV) Environmental Performance Indicator as mentioned above as the lowest non-zero QTED disclosure scores. In the last category of ED index; (V) Environmental Credibility shows that only 41% of the sampled companies disclose any environmental related items in their respective annual report. With respect to addressing the national level environmental concerns of different GCC countries (Vision statements of the GCC companies), the study also assessed the number of business entities those confirmed to these strategies. The annual reports and CSR reports are analyzed to identify whether the companies have incorporated the national environmental visions into the corporate visions and actions. For the year 2010, it was found that only five of the sampled companies were environmentally committed enough to align to such practices. It is possible that the primary reasons behind such corporate behaviors are the absence of vigorous legal regulations regarding environmental disclosure in the GCC. This is accompanied by poor enforcement and encouragement of mandatory and of voluntary environmental guidelines respectively.

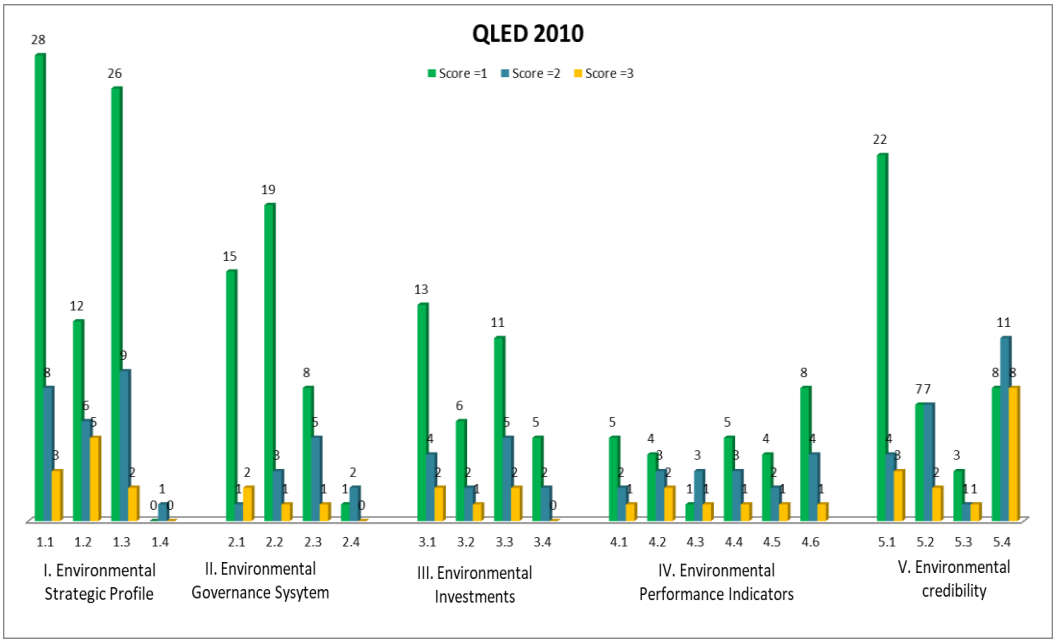

Figure 3(B) *QLED 2010*

Similarly, the figure 3 (B) represents the quality of environmental disclosure (QLED) for the year 2010. Among the qualitative positive scores, (I.1) Environmental Policy of the Organization has the highest score of general disclosure, i.e., score = one. It can be interpreted as 40% of the sampled companies provide general information about the entity's environmental policy. However, only four percent of the companies provide monetary information about the same item in their annual report. Other statistics show that 19 companies (27% of the sample) provide general details on the company's (II.2) Environmental code of ethic and behavior. (V.4) Reference to certification (ISO

Standards, GRI) related information is published in a specific yet non-quantitative way (score=2) by 15.49% of the samples. The scoring index shows there are no companies in the year of 2010 that published a high quality (Score =3) Separate environmental/sustainability report. The same applies to items like (II.4) Environmental Auditing and (III.4) Green Building. There is no quantifiable information with respect these items provided in the annual report of the companies. This exhibits poor qualitative performance among companies regarding high-level environmental activities (for instance, publishing separate CSR report and disclosing about green building). As mentioned before, it is probable that the lack of organization's environmental commitment is vastly contributed by the nonexistent mandatory regulations in the region. Satisfying enough, an 11.3% of the sample publishes a Score =3 disclosure information on international certification like ISO Standards. Lowest quantifiable (Score =3) ED items also includes (IV.3) Land Rehabilitation and Remediation, (IV.4) Water Effluent (V.5) fees/penalties related to environmental issues and (IV.6) Waste products disposal and recycling activities. Only 1.41% of the sample provides this information in monetary terms in their respective corporate reports.

5.4.3.2.2 Yearly Analysis (Scores: QTED & QLED) – 2015

Table 7 represents the descriptive statistics of QTED and QLED scores pertaining to 2015. Compared to 2010, the total average mean score of QTED and QLED has improved by 47% and 72% respectively. For the year 2015, QTED has a total average mean score of 7.03 and QLED has 12.10. Similar to the results of 2010, (I)

Environmental Strategic Profile of the company the highest QTED mean disclosure score 0.45, thereby showing a 30% increase compared to the year 2010. The high scores of this particular item are in accordance with the study results of (Eljayash, et al., 2013) and (Khasharmeh & Desoky, 2013). The results of these studies showed high disclosure among the variables of environmental education, training and organizational policies. The mean score of QLED for the indicator (I) Environmental Strategic Profile of the company is 0.73, followed by 0.71 score of (V) Environmental credibility. Nevertheless, consistent with the 2010 results, (IV) Environmental Performance Indicators has the lowest QTED average mean.

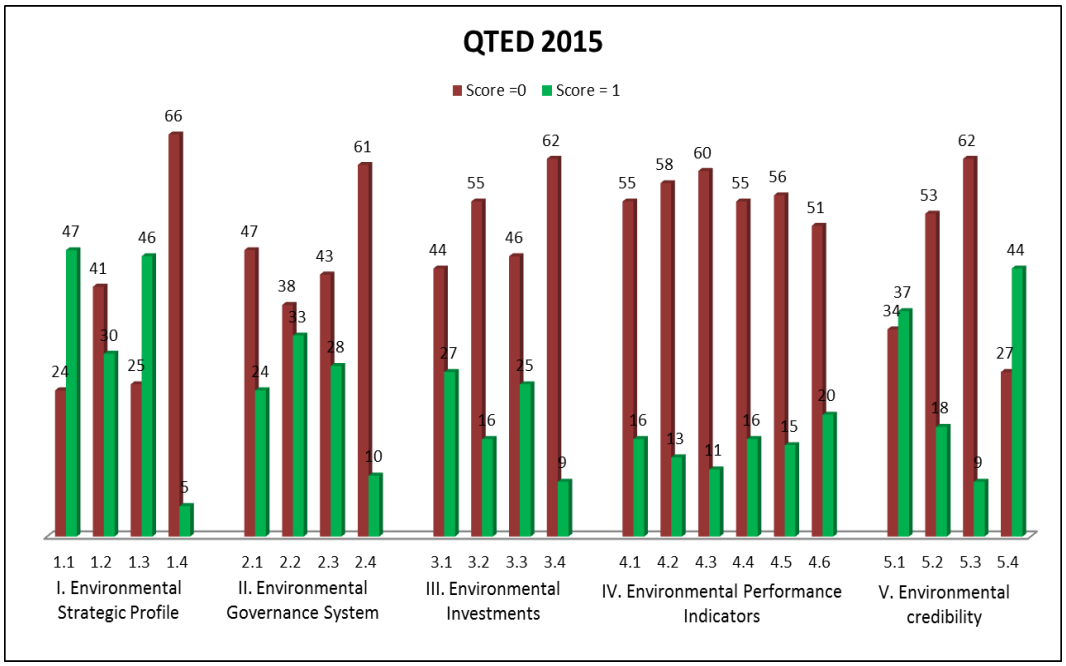

Figure 4 (A) *QTED 2015*

Figure 4 (A) represents scoring for QTED for 2015 for 71 sampled companies in the study. Though the level of zero still leads the QTED scores, yet the positive scores have significantly increased as shown in figure 4 (A) compared to 2010. The figure shows that for the year 2015, five companies (7% of the sample) have published separate corporate environmental or CSR reports compared to one company in 2010 (Refer: Figure 3(A)). (II.2) Environmental code of ethics and behavior has the highest positive score in the second main category of ED indicators (II Environmental Governance System) with 33 companies disclosing the information. The figure also shows that 87% of the sampled companies do not provide any information about (I.4) Separate environmental/sustainability report, (II.4) Environmental auditing, (III.4) Green building and (V.3) Following National Environmental Policies.

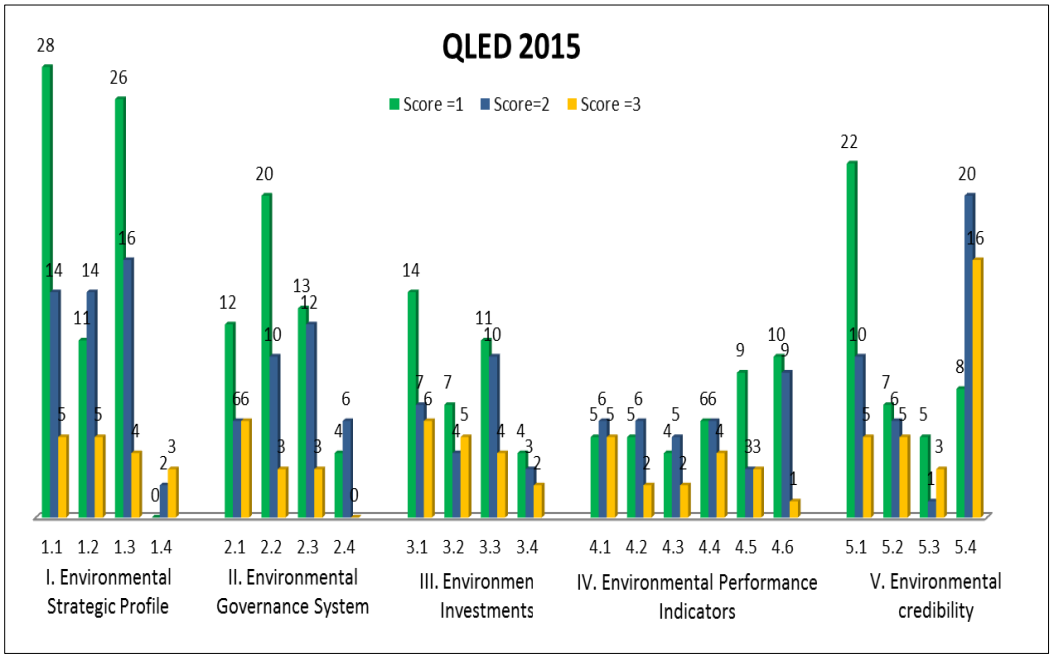

Figure 4 (B) *QLED 2015*

The QLED 2015 in figure 4 (B) represents combined qualitative ED scores for ED indicators. The figure shows that (I.1) Environmental Policy of the Organization is disclosed mostly in generic terms (Score =1), whereas, (V.4) Reference to certification (ISO Standards, GRI) are most provided in highest qualitative terms (Score = +3). There are 23% of the companies that provide a (+3) score information on ISO Standards, GRI. On the contrary, only three companies provide CSR report with highest quality ED score of "+3". Whereas, none of the companies provided (II.4) Environmental auditing

information in highest qualitative terms. Similar results are found in the studies of (Eljayash, et al., 2012) and (Eljayash, et al., 2013), where the disclosure variable for environmental auditing was scored least number of times.

5.4.4 Inter State Analysis: QTED and QLED

Table 8

Interstate Analysis (Mean: QTED & QLED)

Countries	QTED 2010					QTED 2015					**% change in QTED mean**
	Mean	Max.	Min.	Range	SD	Mean	Max.	Min.	Range	SD	
Saudi Arabia	0.29	0.82	0.00	0.82	0.26	0.47	1.00	0.00	1.00	0.32	62.07%
UAE	0.40	0.73	0.00	0.73	0.33	0.32	0.86	0.00	0.86	0.33	-20.00%
Kuwait	0.09	0.50	0.00	0.50	0.14	0.11	0.95	0.00	0.95	0.22	22.22%
Bahrain	0.02	0.05	0.00	0.05	0.03	0.07	0.09	0.05	0.05	0.03	250.00%
Oman	0.18	0.41	0.00	0.41	0.14	0.30	0.55	0.09	0.45	0.19	66.67%
Qatar	0.22	0.55	0.00	0.55	0.20	0.36	0.73	0.09	0.64	0.23	63.64%
QLED 2010-2015											
Countries	QLED 2010					QLED 2015					**% change**

	Mean	Max.	Min.	Range	SD	Mean	Max.	Min.	Range	SD	**in QLED mean**
Saudi Arabia	0.13	0.58	0.00	0.58	0.15	0.28	0.89	0.00	0.89	0.27	115.38%
UAE	0.28	0.56	0.00	0.56	0.26	0.23	0.73	0.00	0.73	0.28	-17.86%
Kuwait	0.04	0.26	0.00	0.26	0.07	0.06	0.62	0.00	0.62	0.15	50.00%
Bahrain	0.01	0.02	0.00	0.02	0.01	0.02	0.03	0.02	0.02	0.01	100.00%
Oman	0.07	0.17	0.00	0.17	0.05	0.12	0.23	0.03	0.20	0.08	71.43%
Qatar	0.10	0.30	0.00	0.30	0.11	0.22	0.52	0.06	0.45	0.17	120.00%

The descriptive statistics in Table 8 shows the interstate analysis of QTED and QLED in the GCC for 2010 and 2015. With respect to the year 2010, it is evident from the result that UAE has the highest mean of QTED of 0.40 followed by Saudi Arabia (0.29) and Qatar (0.22). Likewise, UAE has the highest mean of QLED 0.28, followed by Saudi Arabia (0.13) and Qatar (0.10). However, the maximum value of QTED and QLED is received by Saudi Arabia for the year 2010. Other environmental studies conducted in the GCC have also documented the superior environmental behavior of Saudi Arabia (Khasharmeh & Desoky, 2013; Akrout & Othman, 2013). Furthermore, looking at the figures of 2015, it is seen that Saudi Arabia overtook other GCC nations in QTED (0.47) and QLED (0.28) mean. They are followed by Qatar (QTED 0.36 and QLED 0.22) and UAE (QTED 0.32 and QLED 0.23). The maximum value of QTED and QLED is still leaded by Saudi Arabia. By comprehending and comparing the ED mean, it is found that over the years of 2010 and 2015, all most all the GCC nations have improved the QTED and QLED mean, except for UAE. Bahrain's QTED mean improved by 200%, followed by Oman (66.67%) and Qatar (63.64%), whereas, UAE's QTED mean decreased by -20%. Similarly, Qatar experienced the most qualitative enhancement in the ED mean (QLED) with 120%, but yet again UAE's QLED mean fell by -18%. Several reasons can be suggested to explain the ED behavioral patterns of each economy. For instance, Qatar outshining other GCC countries over the years in terms of ED can be explained by the financial strength of the country by being the richest in the word (Alattar & Khater, 2008). It also is possible that compared to other GCC countries, Qatar initiated further sustainability and environmental regulations for the companies to follow and so

on. Similarly, other GCC ED studies have documented the low-level performance of UAE in recent times (Khasharmeh & Desoky, 2013). The drop in the ED scores in UAE can be an aftermath of lack of enforceability of mandatory environmental regulations and absence of encouragement measures to support voluntary guidelines in the country. The study of Jahamani (2003) conducted in UAE found that corporate decision-makers are aware of environmental protection issues, but their commitment to environment protection is still low. Nowadays, awareness of social and environmental protection is widely acknowledged. Yet, the shortage of motivators (for instance, awards recognizing the voluntary environmental efforts of the company) and small penalties (for not adhering to benchmark behaviors) also are probable reasons for low ED. Hence, it is possible that over the years, compared to other GCC countries, the corporate behavior of UAE has diminished in terms of ED due to the aforementioned reasons.

Table 9

Interstate Analysis (Scores: QTED 2010 & 2015)

QTED Scores	Saudi Arabia		UAE		Bahrain		Oman		Kuwait		Qatar		Total Score 2010	Total Score 2015
	2010	2015	2010	2015	2010	2015	2010	2015	2010	2015	2010	2015		
SCORE = 0	408	301	93	104	43	41	180	153	362	351	138	113	1224	1063
SCORE % = 0	71.4	52.62	60.3	67.5	97.8	93.2	81.9	69.6	91.19	88.64	78.5	64.2	78.34	68.05
Change in Score= (0)	**-26.23%**		**11.83%**		**-4.65%**		**-15.00%**		**-3.04%**		**-18.12%**		**-13.15%**	
SCORE = 1	164	271	61	50	1	3	40	67	35	45	38	63	339	499
SCORE % = 1	28.7	47.38	39.6	32.5	2.28	6.82	18.2	30.5	8.82	11.36	21.6	35.8	21.7	31.95
Change in Score= (1)	**65.17%**		**-17.97%**		**199.68%**		**67.39%**		**28.89%**		**65.62%**		**47.24%**	

In Table 9 the total QTED scores of “Score =0” has decreased by (-) 13.15% in between 2010 and 2015, QTED scores have significantly increased from a total positive score of 339 (SCORE>0 No.) in 2010 to 499 (SCORE>0 No.) in 2015, illustrating an increase in the total QTED of disclosure by 47.29%. In 2010, the inter-country descriptive statistics confirm that UAE has the highest relative Score = “+1” percentage in 2010, corresponding to a 39.61%. On the other hand, Bahrain has the lowest (2.27%) followed by Kuwait with 8.82%. The total QTED positive score (+1) has increased in 2015 in all the GCC countries with an exception of UAE. Saudi Arabia has the highest quality relative environmental disclosure score of 47.38%, i.e., they have improved by 65% from the year 2010. Saudi Arabia is followed by Qatar (35.80%) and UAE (32.47%). Despite the low disclosures positive score, Bahrain has made considerable improvement in 2015 by an increase of 200%. Yet the QTED score of the country falls to the smallest QTED score (6.82%) among others. Interesting enough, UAE is the only GCC country that has experienced a shortfall in the QTED disclosure score in 2015.

Table 10

Interstate Analysis (Scores: QLED 2010 & 2015

QLED Scores	**KSA**		**UAE**		**Bahrain**		**Oman**		**Kuwait**		**Qatar**		**Sum**	**Sum**
	2010	2015	2010	2015	2010	2015	2010	2015	2010	2015	2010	2015	**2010**	**2015**
SCORE = 0	408	301	93	104	43	41	180	153	362	351	138	113	1224	1063
SCORE % = 0	71.4	52.7	60.3	67.5	97.8	93.2	81.9	69.6	91.2	88.6	78.5	64.2	78.3	68.1
Change in Score= (0)	-26.23%		11.83%		-4.65%		-15.00%		-3.04%		-18.12%		-13.15%	
SCORE = 1	110	116	14	15	1	3	38	57	21	17	27	23	211	231
SCORE % = 1	19.2	20	9.08	9.74	2.28	6.9	17.3	25.9	5.29	4.3	15.4	13	13.5	14.8
Change in Score= (+1)	5.41%		7.23%		199.68%		49.90%		-18.85%		-14.90%		9.51%	
SCORE = 2	43	102	25	15	0	0	0	7	13	25	7	27	88	176
SCORE % = 2	7.52	17.8	16.2	9.74	0.00	0.00	0.00	3.18	3.27	6.31	3.98	15	5.63	11.3
Change in Score = (+2)	137.10%		-39.95%		N/A		N/A		92.78%		285.32%		100.06%	
SCORE = 3	11	53	22	20	0	0	2	3	1	3	4	13	40	92
SCORE % = 3	1.92	9.27	14.3	13.0	0.00	0.00	0.91	1.4	0.25	0.76	2.28	7.39	2.56	5.89
Change in Score =(+3)	381.60%		-9.02%		N/A		49.90%		200.73%		224.67%		130.07%	

In table 10 the scores for QLED country analysis is depicted, scoring grade "Score=1" is increased by 9.50%, non-quantitative yet specific details "Score=+2" has increased by 100% in 2015 and the highest peak was seen in "Score=+3" (quantitative/monetary) discloser, which has improved by 130%. The total QLED score varies from a minimum score of zero (o) to a maximum of 66 (22 ED items*3). With regards to the general scoring, in (Score=+1) Kuwait and Qatar had a decline, this is justified because the company QLED scores of these countries have now upgraded to more specific and higher quality disclosure scoring. Bahrain failed to provide any specific yet non-quantitate ED information the sampled company's annual reports. Oman has made improvements in the Score =+2 counting. Qatar followed by Saudi Arabia had the highest improvement in Score =+2 disclosure. Highest quality disclosure (+3) scoring has been most improved in Saudi Arabia, i.e., close to 400% enhancement. They are followed by Qatar with 225% from 2010 to 2015.

In a nutshell, the results of the QTED and QLED (mean and scores) analysis shows that environmental disclosure practices are very limited in GCC. The mean QTED is 0.32 and QLED is 0.18 in the year 2015 (Refer: Table 6), representing a low level of reporting environmental variables among the sampled companies. Alsaeed (2006), Al-Shammari (2008) Hossain and Hammami, (2009) and Juhmani, (2014) has found similar low level of ED based on single year analysis and individual GCC economies. This study analyzed ED in 2010 and 2015, and the results show noticeable advancements in the quantity and quality of ED. For example, all the GCC economies have improved the ED (QTED and QLED) mean and scores over the study years (Refer: Table 8 and Table 10). Yet, there is

still a long way for ED to improve. The QTED and QLED disclosure results are in accordance with most MENA and GCC ED studies. Eljayash (2015), Alsaeed (2006), Naser, et al., (2006) Hossain and Hammami, (2009), Juhmani, (2014) and Al-Shammari (2008) has documented similar results with respect to environmental disclosure in GCC economies. For instance, in the data analysis of ED, it is found that some of the index variables like the organizational environmental policy, training and campaigns are scored high and variables regarding environmental auditing, land rehabilitation and recycling practices are scored low. Similar results regarding these variables are concluded by Eljayash, et al., (2012) and Eljayash, et al., (2013). Likewise, the drop in ED in UAE is documented by Khasharmeh & Desoky (2013). Their study showed low ED practices among the listed companies in UAE.

From a theoretical perspective, the low level of ED and the determinants of the prevailing ED in the region can be explained with the following reasons. The primary corporate characteristics of the GCC market include the proportion of institutional investors, the un-unified individual investors and government ownership. All these features reveal to have little impact on the level of ED (Naser, et al., 2006). Furthermore, institutional investors as well as the majority of shareholders are concentrated within few families in each GCC economy. Such an economic scenario will weaken pressure groups (for instance, environmental NGOs). These groups exert pressure on companies and mandate them to disclose environmental information that reflects their societal responsibility. Dispersion of individual shareholders, on the other hand, reduces pressure on management to disclose detailed CSR information. Therefore, management sees little

incentives to voluntarily disclose information. Hence, legitimacy and stakeholders theories do not completely explain the ED motives in these emerging economies compared to the developed ones. Also, over the years improvements in national environmental guidelines and international benchmarks have made the GCC economy more responsive to these theories. For instance, including environmental protocols in national vision statements (Qatar MDPS (Ministry of Development Planning and Statistics), 2008; UAE Cabinet, 2010) and industry specific environmental regulations (Chemical Watch, 2009) forces the management to adhere to expected behavior and gives stakeholders the right to question the corporate behavior.

5.5 Trend Analysis

5.5.1 Trend Test – Yearly Analysis

Trend test conducted using a paired-sample t-test to identify and analyze the significant difference between extent (QTED) and quality (QLED) of ED mean across the two sampled years i.e., 2010 and 2015.

Table 11

Trend Test (2010 & 2015)

Pair 1 (QTED 2010 & QTED 2015)					**Pair 2 (QLED 2010 & QLED 2015)**			
	Mean	N	Std. Dev	Std. Error Mean	Mean	N	Std. Dev	Std. Error Mean
2010	0.218	71	0.236	0.028	0.10	71	0.14	0.017
2015	0.316	71	0.299	0.035	0.18	71	0.22	0.026
Paired Sample 2010-2015		Correlation	Sig.	Sig. (2-tailed)		Correlation	Sig.	Sig. (2-tailed)
		0.762	0.000	0.000		0.646	0.000	0.000
Paired Differences (QTED 2010 - QTED 2015)					**Paired Differences (QLED 2010 - QLED 2015)**			
Paired Sample 2010-2015	Mean	Std. Dev	Std. Error Mean	t df	Mean	Std. Dev	Std. Error Mean	t df
	-0.098	0.194	0.023	-4.2 70	-0.07	0.171	0.02	-3.68 70

Table 11 shows the results of the paired-sample t-test. The numbers show that QTED and QLED differ significantly among the two sampled years. The mean difference between two sampled years for QTED (-0.09) and QLED (-0.07) shows probable

difference among the years. This is confirmed by a sig. (2-tailed) p-value of 0.000 portraying significant difference between the two ED variables in two years. Also, the high positive correlation between the paired samples reveals the same. Referring to the mean differences, it can be concluded that there is a positive movement in the QTED and QLED mean over the years. This is a sign of more companies moving towards improved environmental disclosure practice over the years. Prior studies have listed possible reasons that drives this trend of ED in the recent decade (Jenkins & Yakovleva, 2006; Nor, et al., 2016). This includes, firstly, the global wide pattern of increased concerned about sustainability and social responsibility of businesses. The topic of sustainability has become a high profile issue in many countries and industries, especially among the environmentally sensitive sectors (Jenkins & Yakovleva, 2006). The public concerns over this problem have led to the emergence of new environmental regulations (mandatory and voluntary) across various economies (Nor, et al., 2016). Which directly and indirectly mandates corporates to behave more environment friendly and communicate these practices to its stakeholders. The GCC companies follows this global trend of enhanced ED over the years. Secondly, firms in the 21st century have corporate motives behind showcasing their social-environmental commitment, like better business reputation, pursuing more loyal customers, attaining stakeholders' wealth and so on. In addition, in the context of GCC economy, the environmental regulations and policies practiced are limited in the region (Khasharmeh & Desoky, 2013). Yet, in recent times there has been a significant change at national strategic levels. For instance, in the national vision statements of most GCC states have dedicated formal sections of in-depth environmental

protection and sustainability guidelines. This practice was nonexistent in earlier decades. Lately, these voluntary protocols accompanied with nationwide environmental NGOs encourage progressive ED practices among the GCC corporate citizens.

5.5.2 Trend Test – Interstate Analysis

The interstate analysis among the six GCC countries is performed using non-parametric test (K Independent Samples). A nonparametric test is used when there are k independent samples, in order to determine if the samples come from a single population or if at least one sample comes from a different population than the others (Khasharmeh and Desoky, 2013; Lu & Abeysekera, 2014). The results show significant difference in the QTED and QLED mean.

Table 12

Trend Test (GCC countries) – QTED

Pairwise comparison	Test Statistics	Std. Error	Std. Test statistics	Sig.	Adj.Sig
Bahrain-Kuwait	6.13	21.54	0.28	0.77	1.000
Bahrain-Oman	-41.42	22.38	-1.85	0.64	0.964
Bahrain-Qatar	-43.40	22.84	-1.90	0.05	0.862
Bahrain-UAE	46.44	23.17	2.00	0.04	0.675
Bahrain-Saudi Arabia	50.55	21.27	2.38	0.01	0.257
Kuwait-Oman	-35.28	11.39	-3.09	0.00	0.029
Kuwait-Qatar	-37.26	12.28	3.03	0.00	0.036
Kuwait-UAE	40.30	12.87	3.31	0.00	0.026
Kuwait-Saudi Arabia	44.42	8.86	5.01	0.00	0.000
Oman-Qatar	-1.98	13.70	-0.14	0.88	1.000
Oman-UAE	5.02	12.23	0.35	0.72	1.000
Oman-Saudi Arabia	9.13	10.75	0.84	0.39	1.000
Qatar-UAE	3.04	14.95	0.20	0.83	1.000
Qatar- Saudi Arabia	7.15	11.68	0.61	0.54	1.000
UAE-Saudi Arabia	4.11	12.30	0.33	0.73	1.000

Table 12 displays difference in the QTED mean among the GCC countries. The results show Kuwait's QTED to be most significantly different from other GCC countries' QTED mean. It is most significantly different from Saudi Arabia (Std. Test statistics 5.01, Sig. 0.000), Oman (Std. Test statistics -3.09, Sig. 0.029), Qatar (Std. Test statistics 3.03, Sig. 0.036) and UAE (Std. Test statistics 3.31, Sig. 0.026) (Refer: Table 12). On the other hand, there is no visible significant difference among the QTED scores for the rest of the GCC economies.

Table 13

Trend Test (GCC countries) – QLED

Pairwise comparison	Test Statistics	Std. Error	Std. Test statistics	Sig.	Adj.Sig
Bahrain-Kuwait	9.72	21.55	0.45	0.65	1.000
Bahrain-Oman	-38.38	22.40	-1.73	0.08	1.000
Bahrain-Qatar	-47.84	22.86	-2.09	0.36	0.546
Bahrain-UAE	50.35	23.18	2.17	0.03	0.448
Bahrain-Saudi Arabia	50.40	21.22	2.37	0.01	0.263
Kuwait-Oman	-29.12	11.40	-2.55	0.01	0.160
Kuwait-Qatar	-38.12	12.28	-3.10	0.00	0.029
Kuwait-UAE	40.64	12.88	3.15	0.00	0.024
Kuwait-Saudi Arabia	40.68	8.86	4.58	0.00	0.000
Oman-Qatar	-8.99	13.71	-0.65	0.51	1.000
Oman-UAE	11.50	14.25	0.80	0.41	1.000
Oman-Saudi Arabia	11.55	10.76	1.07	0.28	1.000
Qatar-UAE	2.53	14.96	0.16	0.86	1.000
Qatar- Saudi Arabia	2.56	11.69	0.21	0.82	1.000
UAE-Saudi Arabia	0.04	12.31	0.00	1.00	1.000

Similarly, with respect to the QLED mean, Table 13 summarizes the significant difference among the GCC counties. Consistent with the results of QTED mean differences, QLED mean of Kuwait is significantly different from that of Saudi Arabia (Std. Test statistics 4.58, Sig. 0.000), UAE (Std. Test statistics 3.15, Sig. 0.024) and Qatar (Std. Test statistics -3.10, Sig. 0.029).

In summary, the results of trend analysis confirm significant difference among the quantity (QTED) mean and quality (QLED) mean among the two sampled years in the study. Hence, proving that ED in GCC is significantly moving towards a positive change. Furthermore, the interstate test shows significant variability among few individual GCC countries with respect to the ED mean. Nevertheless, on average, the ED scores are stably similar for the majority of GCC nations.

5.6 Correlation

Correlation test is conducted as an initial test to check the relationship between independent (QTED and QLED), dependent (F_VAL and C_CAP) and control variables (firm size, leverage, firm age, listing status, audit type and firm performance). The Pearson correlation for the variables in 2010 shows significant positive correlation among QTED and QLED with Market Capitalization (MC), Enterprise Valuation (EV), Cost of Equity (CoE), total debt to total asset ratio, total assets, net sales, assets to equity ratio and audit type (Refer: Appendix D). In addition, the correlation of variables for the year 2015 shows similar results. A Significant and positive relationship can be found among QLED with MC, EV, CoE, CoD, total assets, net sales, total debt to total assets, assets to

equity and audit type. Also, QTED mean of 2015 is significantly and positively correlated with all the above variables, plus the Tobins' Q (TQ) (Refer: Appendix E).

5.7 Multicollinearity Test

Before running the regression, the independent and control variables are tested for multicollinearity. The correlation test performed in the previous section (Refer: Section 5.6) lays foundation to check the issue of multicollinearity. The correlation coefficient among the control variables are minimal (Refer: Appendix D and Appendix E), due to which the issue of multicollinearity can be ignored for these variables. On the contrary, the correlation coefficient between the two independent variables (QTED and QLED) are high, i.e. coefficient exceeds 0.80. Thus, further test for multicollinearity is performed for the independent variables.

Table 14

Multicollinearity Test

Model			QTED .10	QLED .10	QTED .15	QLED .15
QTED .10	Collinearity Statistics	Tolerance		0.562	0.086	0.09
		VIF		1.779	11.579	11.139
QLED .10	Collinearity Statistics	Tolerance	0.409		0.07	0.087
		VIF	2.443		14.262	11.485
QTED .15	Collinearity Statistics	Tolerance	0.093	0.104		0.525
		VIF	10.747	9.639		1.904
QLED .15	Collinearity Statistics	Tolerance	0.072	0.096	0.391	
		VIF	13.901	10.43	2.56	

Table 14 presents the summary of multicollinearity test of the independent variables (QTED and QLED). It is important to note that the ED variables have the multicollinearity issue. Multicollinearity occurs when two or more variables are highly correlated. Multicollinearity among either variable sets will confound the ability of the technique to isolate the impact of any single variable, making the interpretation less reliable (Hair, et al., 2010). In this particular case, the issue problematic collinearity may

have risen due to the repetition of the similar ED measuring values or small sample size.

5.8 Regression analysis

The results of the regression analysis examining the relations between environmental disclosure and economic position of the companies are listed in the following tables. Linear regression among ED and economic variables including; Firm Value (F_VAL) measured in terms of Market Capitalization (MC) Enterprise Value (EV) and Tobin's Q and Cost of Capital (C_CAP) in terms of Equity (Cost of Equity (CoE) and cost of Debt (CoD)) are performed. In addition, Weighted Average Cost of Capital (WACC) is also tested for a possible relationship with ED scores.

The regression model employed to test the relationship between ED indicators and financial variables are presented below

$$F\_Val = \alpha + \beta_1 QTED \pm \beta_2 F\_SIZ \pm \beta_3 F\_LEV \pm \beta_4 F\_PER \pm \beta_5 F\_TYP \pm \beta_6 F\_AGE \pm \beta_7 F\_LIS$$

$$F\_Val = \alpha + \beta_1 QLED \pm \beta_2 F\_SIZ \pm \beta_3 F\_LEV \pm \beta_4 F\_PER \pm \beta_5 F\_TYP \pm \beta_6 F\_AGE \pm \beta_7 F\_LIS$$

$$C\_CoE = \alpha - \beta_1 QTED \pm \beta_2 F\_SIZ \pm \beta_3 F\_LEV \pm \beta_4 F\_PER \pm \beta_5 F\_TYP \pm \beta_6 F\_AGE \pm \beta_7 F\_LIS$$

$$C\_CoE = \alpha - \beta_1 QLED \pm \beta_2 F\_SIZ \pm \beta_3 F\_LEV \pm \beta_4 F\_PER \pm \beta_5 F\_TYP \pm \beta_6 F\_AGE \pm \beta_7 F\_LIS$$

$$C\_CoD = \alpha - \beta_1 QTED \pm \beta_2 F\_SIZ \pm \beta_3 F\_LEV \pm \beta_4 F\_PER \pm \beta_5 F\_TYP \pm \beta_6 F\_AGE \pm \beta_7 F\_LIS$$

$$C\_CoD = \alpha - \beta_1 QLED \pm \beta_2 F\_SIZ \pm \beta_3 F\_LEV \pm \beta_4 F\_PER \pm \beta_5 F\_TYP \pm \beta_6 F\_AGE \pm \beta_7 F\_LIS$$

Where,

F_VAL: measured by Market capitalization (MC), Enterprise Value (EV) and Tobin's Q (TQ) for the quarter ended 31 March 2011/2016

QTED: Extent of environmental disclosure ratio for the year ended 31 December 2010/2015

QLED: Quality of environmental disclosure ratio for the year ended 31 December 2010/2015

C_CoE: Cost of Equity for the quarter ended 31 March 2011/2016

C_CoD: Cost of Debt for the quarter ended 31 March 2011/2016

F_SIZ: Firm size for the quarter ended 31 March 2011/2016

F_LEV: Leverage for the quarter ended 31 March 2011/2016

F_PER: Firm performance for the quarter ended 31 March 2011/2016

F_TYP: Audit type for the quarter ended 31 March 2011/2016

F_AGE: Firm age for the quarter ended 31 March 2011/2016

F_LIS: Listing status for the quarter ended 31 March 2011/2016

5.8.1 Regression Analysis – 2010

5.8.1.1 Regression Analysis - QTED and QLED - F_VAL (MC, EV and TQ)

Table 15

Regression Analysis - ED and Firm Value (2010)

		QTED 2010							**QLED 2010**					
		MC		EV		TQ		**CV**	MC		EV		TQ	
CV		β	Sig.	β	Sig.	β	Sig.		β	Sig.	B	Sig.	β	Sig.
	QTED 2010	0.08	0.16	0.05	0.27	0.04	0.79	QLED 2010	0.06	0.28	0.05	0.31	0.03	0.84
Leverage	TB/ TA	-0.05	0.519	0.097	0.17	-0.10	0.64	TB/ TA	-0.06	0.49	0.09	0.18	-0.10	0.637
	A/E	-0.29	0.01	-0.1	0.34	-0.02	0.94	A/E	-0.3	0.01	-0.09	0.32	-0.02	0.93

	TA	0.94	0.00	0.87	0.00	0.2	0.42	TA	0.94	0.00	0.85	0.00	0.2	0.42
Firm Size	GR	-0.04	0.42	-0.03	0.45	-0.15	0.23	GR	-0.04	0.44	-0.03	0.46	-0.15	0.23
	NS[2]	-0.05	0.7	0.01	0.92	-0.11	0.75	NS	-0.03	0.78	0.02	0.87	-0.1	0.77
Listing Status	LS	-0.26	0.01	-0.16	0.04	-0.51	0.04	LS	-0.26	0.00	-0.17	0.03	-0.51	0.04
Age	FA	0.01	0.844	0.012	0.78	0.12	0.35	FA	0.009	0.86	0.01	0.79	0.124	0.349
Audit Type	AT	0.08	0.257	0.010	0.88	0.10	0.59	AT	0.089	0.20	0.01	0.83	0.109	0.561
Firm	ROA[2]	-0.17	0.334	0.139	0.36	0.01	0.99	ROA	-0.18	0.29	0.13	0.39	0.000	0.999
Performance	ROE	0.35	0.020	0.010	0.94	0.58	0.15	ROE	0.363	0.02	0.02	0.91	0.584	0.150
Sig.		0.00		0.000		0.00			0.000		0.00		0.000	
R		0.96		0.970		0.70			0.964		0.97		0.704	
R2		0.93		0.941		0.49			0.930		0.94		0.496	

[2] ROA is added representing the firm performance variable and net sales for firm size. The variables has been backed by couple of literature in ED (Hongium & Xiaobo, 2010 and Huang & Kung, 2010). Also, regressions performed after the removal of the variables showed no significant change in the results. Hence, it was decided to keep both the variables.

The regression analysis is executed testing the relationship between extent and quality of ED with firm value variables for the year 2010. In the following Table 15, firstly, Market Capitalization (MC) is correlated with QTED along with ten control variables. The analysis shows the model is significant with a 0.000 p-value and highly correlated with an R Square of 0.930, yet the relationship between MC and QTED has failed to show any significant relationship. In the regression model, control variables assets to equity (negative), total assets (positive), multiple listing (negative) and ROE (positive) show a significant relation with the constant variable. The lack of significant relationship between QTED and firm value variables applies for EV and TQ with respect to their probable relationship in 2010.

Similar to the relationship between quantity (QTED) of ED and firm value measurements, there exists no significant relationship between QLED and firm value measurements. In the above table 15, all the regression models are significant with a P-value of .000, yet none of the dependent variables show significance with the QLED. Multiple listing status of the company consistently shows significant negative relationship across all three models. Based on the regression results, it can be concluded that for the year 2010, there is no significant relationship between the QTED and QLED to firm value variables in the listed GCC chemical and petrochemical companies. Hence, alternative hypothesis (H1a and H1b) is rejected.

Nevertheless, the direction of the relationship between the ED and firm value variables are positive. The positive beta scores conform to the theories of legitimacy and stakeholder. These theories ideally expect firm value variables to react positively when

companies disclose more environmental disclosure information. Hongjun and Xiaobo (2008) showed no significant relationship between ED and firm value measurements in their study. For those studies that did conclude with positive correlation hints, like studies of Griffin and Sun (2012), Clarkson et al., (2013) and Calace (2014), the reason may include difference in country setting, ED measurement criteria and index.

5.8.1.2 Regression Analysis - QTED and QLED – C_CAP (WACC, CoE, and CoD)

Table 16

Regression Analysis - ED and Cost of Capital (2010)

		QTED 2010							**QLED 2010**					
		WACC		CoE		CoD		**CV**	WACC		CoE		CoD	
CV		B	Sig.	β	Sig.	β	Sig.		β	Sig.	β	Sig.	β	Sig.
	QTED 2010	0.048	0.737	0.01	0.93	0.1	0.48	QLED 2010	0.00	0.99	-0.02	0.914	0.07	0.629
Leverage	TB/ TA	-0.002	0.994	0.22	0.30	0.65	0.00	TB/ TA	-0.01	0.97	0.22	0.304	0.65	0.003
	A/E	-0.601	0.037	-0.30	0.28	-	0.38	A/E	-0.61	0.03	-0.31	0.266	-0.25	0.356

						0.24								
	TA	0.620	0.013	0.77	0.00	0.57	0.02	TA	0.62	0.01	0.77	0.002	0.57	0.019
	GR	0.041	0.736	0.12	0.33	-0.1	0.23	GR	0.045	0.71	0.12	0.318	-0.14	0.240
Firm Size														
	NS	-0.202	0.543	-0.23	0.49	-0.52	0.11	NS	-0.177	0.59	-0.21	0.515	-0.49	0.128
Listing Status	LS	-0.031	0.899	0.08	0.73	-0.12	0.62	LS	-0.04	0.88	0.08	0.731	-0.13	0.590
Age	FA	0.006	0.960	0.06	0.66	-0.11	0.39	FA	0.01	0.96	0.06	0.659	-0.11	0.384
Audit Type	AT	0.114	0.539	0.12	0.51	-0.08	0.68	AT	0.14	0.46	0.13	0.462	-0.06	0.746
Firm Performance	ROA	-0.016	0.973	0.21	0.64	0.08	0.85	ROA	-0.040	0.93	0.19	0.661	0.06	0.895

	ROE	0.235	0.553	-0.11	0.77	0.05	0.89	ROE	0.25	0.53	-0.11	0.784	0.06	0.864
Sig.		0.000		0.00		0.00			0.00		0.00		0.00	
R		0.705		0.7		0.67			0.71		0.70		0.66	
R2		0.496		0.49		0.45			0.49		0.49		0.44	
Adj. R Sq		0.379		0.37		0.32			0.39		0.37		0.30	
N		71		71		71			71		71		71	

In the above Table 16, regression results of the relationship between WACC, CoE and CoD with QTED and QLED for the year 2010 has been presented along with the control variables. With regards to the regression model, all of them are significant. But the investigation of possible negative relationship between environmental disclosure values and cost of capital is insignificant. Both the CoE and CoD variables with respect to quantity (QTED) and quality (QLED) show an insignificant relationship. Since the cost of capital variables shows no noteworthy relationship with the environmental disclosure information, thus, the alternative hypothesis cannot be accepted (H2a, H2b, H3a and H3b). The results do not support legitimacy and agency theory. Based on the legitimacy theory, when a company explicitly legitimizes its activities, by publishing the ED information, it is interpreted as a boost for firm credibility. Thereby, helping the firms to reduce its cost to acquire finance (Gana & Dakhlaou, 2011). Likewise, agency theory ideally explains the reduction in the agency cost and thereby attaining cheap finance when companies increase voluntary disclosures. Whereas, the relationship showed in this study results between ED and cost of capital does not comply with the theory. Nevertheless, the insignificant relationship between ED and cost of capital is confirmed by the prior study of Clarkson, et al., (2010). Where the study examined the impact of ED on cost of capital and the evidence confirmed no significant effect on cost of capital caused by ED. The study results of Gray & Blejer (2007) supports the lack of probably significant relationship between ED and financial variables in the GCC.

Table 17

Regression Analysis - ED and Firm Value (2015)

Variables	CV	QTED 2015						CV	QLED 2015					
		MC		EV		TQ			MC		EV		TQ	
		B	Sig.	β	Sig.	β	Sig.		B	Sig.	β	Sig.	β	Sig.
	QTED 2015	0.11	0.08	0.18	0.04	0.11	0.37	QLED 2015	0.11	0.10	0.22	0.01	0.10	0.41
Leverage	TB/TA	0.03	0.75	0.12	0.43	0.16	0.46	TB/TA	0.03	0.75	0.12	0.43	0.16	0.46
	A/E	-0.36	0.00	-0.10	0.50	0.08	0.70	A/E	-0.36	0.00	-0.10	0.46	0.07	0.71
Firm Size	TA	0.90	0.00	0.47	0.00	-0.05	0.78	TA	0.89	0.00	0.44	0.00	-0.06	0.72
	GR	0.04	0.40	0.03	0.62	0.11	0.24	GR	0.0	0.43	0.03	0.65	0.11	0.26

									3					
	NS	0.12	0.23	0.39	0.01	0.23	0.26	NS	0.14	0.17	0.40	0.00	0.24	0.22
Listing Status	LS	-0.10	0.44	-0.11	0.54	-0.32	0.21	LS	-0.10	0.4	-0.12	0.49	-0.32	0.21
Age	FA	0.02	0.71	-0.00	0.97	0.01	0.88	FA	0.01	0.73	-0.00	0.98	0.01	0.90
Audit Type	AT	-0.14	0.06	-0.20	0.07	-0.21	0.18	AT	-0.14	0.06	-0.22	0.05	-0.20	0.18
Firm Performance	ROA	-0.08	0.54	0.15	0.43	0.72	0.00	ROA	-0.07	0.57	0.14	0.44	0.73	0.00
	ROE	0.28	0.02	0.01	0.95	0.02	0.90	ROE	0.280	0.031	0.011	0.949	0.023	0.925

Sig.	0.00	0.00	0.00	0.00	0.00	0.00
R	0.94	0.89	0.69	0.9	0.89	0.76
R2	0.89	0.80	0.59	0.8	0.80	0.59
Adj. R Sq	0.87	0.75	0.50	0.87	0.76	0.50
N	71	71	71	71	71	71

5.8.2 Regression Analysis - 2015

5.8.2.1 Regression Analysis - QTED and QLED (MC, EV and TQ)

Table 17 combines the regression coefficients of firm value variables and environmental disclosure. For the year 2015, MC and EV show a positive and significant relationship with QTED. MC and EV have a positive relationship with the QTED mean with a coefficient (β) of 0.115 and 0.0.118 respectively. The relationship is significant with a P-value of 0.085 (significant at P-value of 0.1) and 0.047 (significant at P-value of 0.05) respectively. Control variables of assets to equity, total assets and audit type also show significant contribution to the model. Interestingly, similar to the 2010 regression results TQ shows an insignificant relationship with the QTED for the year 2015 also. Hence, it can be concluded that there is a positive relationship between the extent (quantity) of the ED and firm value (MC and EV). Thus, the alternative hypothesis is partially accepted (H1a).

In addition, with regards to the quality of ED, QLED 2015 shows a significant and positive relationship with only one firm value variable, i.e. the EV variable. The relationship model is significant with a Sig. value of 0.000. Also, the coefficient of the relationship between EV and QLED is 0.228 (Sig. 0.017). Furthermore, TQ continues to show no significant relationship with QLED. This leads to partially accepting the alternative hypothesis (H1b). Unlike the 2010 regression results, in 2015, MC and EV shows positive and significant correlation with ED variables. This positive relationship is backed by the theories discussed in the study. For instance, Barkemeyer (2007) and Singh, et al., (2017) uses legitimacy theory to explain the ED practices of firms and

thereby positively impacting the firm value of the company. Furthermore, Spence & Gray (2007) and Wang (2016) employ stakeholder's theory to explain the same. The positive and significant relationship between the aforementioned variables are supported by studies of Griffin and Sun (2012), Matsumura, et al., (2014) and Plumlee, et al., (2015).

5.8.2.2 Regression Analysis - QTED and QLED (WACC, CoE and CoD)

Table 18

Regression Analysis - ED and Cost of Capital (2015)

		QTED 2015							**QLED 2015**					
		WACC		CoE		CoD		CV	WACC		CoE		CoD	
CV		B	Sig.	B	Sig.	β	Sig.		β	Sig.	β	Sig.	β	Sig.
	QTED 2015	0.20	0.14	0.13	0.39	-0.01	0.87	QLED 2015	0.24	0.11	0.18	0.24	0.01	0.90
Leverage	TB/ TA	-0.00	0.99	0.10	0.70	0.76	0.00	TB/ TA	-0.00	0.98	0.10	0.70	0.76	0.00
	A/E	-0.68	0.00	-0.12	0.65	-0.34	0.08	A/E	-0.69	0.00	-0.12	0.63	-0.35	0.08
	TA	0.32	0.14	0.28	0.24	0.60	0.00	TA	0.29	0.17	0.26	0.27	0.60	0.00
Firm Size	GR	-0.02	0.84	-0.16	0.21	0.18	0.05	GR	-0.02	0.82	-0.16	0.20	0.19	0.05
	NS	-0.15	0.51	-0.01	0.95	-0.32	0.10	NS	-0.14	0.53	-0.01	0.94	-0.34	0.08
Listing	LS	-0.01	0.89	-0.06	0.58	0.05	0.51	LS	-0.01	0.86	-0.06	0.55	0.05	0.53

Status			5		5	7	8			0		8	5	3
Age	FA	-0.07	0.54	-0.25	0.06	-0.11	0.27	FA	-0.07	0.54	-0.25	0.06	-0.10	0.28
Audit Type	AT	-0.09	0.44	-0.03	0.78	-0.00	0.98	AT	-0.10	0.37	-0.0	0.69	-0.01	0.91
Firm	ROA	-0.10	0.73	0.24	0.49	0.00	0.97	ROA	-0.10	0.72	0.23	0.50	-0.00	0.99
Performance	ROE	0.23	0.40	-0.14	0.66	-0.11	0.63	ROE	0.23	0.40	-0.13	0.67	-0.10	0.65
Sig.		0.00		0.02		0.00			0.00		0.01		0.00	
R		0.69		0.56		0.77			0.69		0.57		0.79	
R2		0.47		0.31		0.60			0.48		0.32		0.62	
Adj. R Sq		0.36		0.17		0.52			0.37		0.18		0.54	
N		71		71		71			71		71		71	

In the regression summary of Table 18, it is evident that are the relationship models trying to explain the possible relationship between the cost of capital variables and environmental reporting information are significant with 0.000 p-value for both QTED and QLED. Yet the individual cost of capital measurements are not significantly related to the ED. Looking at the coefficients explaining the relationship between cost of capital variables (WACC, CoE and CoD) with QTED, it can be found that for CoD has a negative relation with QTED and CoE and WACC has positive, but this information is not useful since the significance level (P-Value) is way above 0.05. Correspondingly, the alternative hypothesis (H2a, H2b, H3a and H3b) is rejected for the relationship between cost of capital measurements (WACC, CoE and CoD) and QTED and QLED. Likewise the results of ED and cost of capital variables in 2010, the regression coefficient showed no probable relationship between the tested variables in 2015.

The results contradict the agency theory assumption of how with more voluntary environmental disclosures companies attempt to reduce investor uncertainty and thereby aim to attain easier and cheaper finance. The insignificant relationship among the variables are consistent with study results of Clarkson, et al., (2010). Also, Gray & Blejer (2007) confirm the lack of causual relationship between the finanical variables and ED in the GCC.

Table 19

Regression Summary

Hypothesis	Variables	Year 2010				Year 2015			
		R^2	B	Sig.	Inference	R^2	β	Sig.	Inference
H1a: There is a significant relationship between quantity (extent) of ED and firm value	MC	0.93	0.077	0.161	Hypothesis Rejected	0.898	0.115	0.085	Hypothesis partially accepted
	EV	0.941	0.052	0.274		0.800	0.188	0.047	
	TQ	0.496	0.039	0.788		0.591	0.114	0.378	
H1b: There is a significant relationship between quality of ED and firm value	MC	0.93	0.057	0.276	Hypothesis Rejected	0.897	0.111	0.106	Hypothesis partially accepted
	EV	0.941	0.046	0.314		0.806	0.228	0.017	
	TQ	0.496	0.029	0.839		0.59	0.106	0.419	
H2a: There is a significant relationship between quantity (extent) of ED and cost of equity	CoE	0.491	0.013	0.926	Hypothesis Rejected	0.477	0.135	0.392	Hypothesis Rejected

H2b: There is a significant relationship between quality of ED and cost of equity.	CoE	0.491	-0.015	0.914	Hypothesis Rejected	0.328	0.186	0.241	Hypothesis Rejected
H3a: There is a significant relationship between quantity (extent) of ED and cost of debt	CoD	0.448	0.098	0.484	Hypothesis Rejected	0.605	-0.018	0.875	Hypothesis Rejected
H3b: There is a significant relationship between quality of ED and cost of debt.	CoD	0.436	0.066	0.629	Hypothesis Rejected	0.625	0.014	0.907	Hypothesis Rejected

5.9 Regression Results: Discussion

The regression analysis shows interesting yet consistent results with former literature in terms of no significant relationship between ED and corporate value (Ingram, 1978; Hongjun & Xiaobo, 2008) and negative relationship between cost of capital and ED (Plumlee, et al., 2010; Pled & Latridis, 2012). Thus, the alternative hypothesis is rejected for most of the relationships that has been tested. Nevertheless, few exceptions can be noted with firm value variable (MC) displaying positive and highly significant relationships within QTED 2015, and EV with QTED and QLED in 2015. The regression analysis for 2010 confirms no significant relationship between firm value measurements and ED. The nature of insignificance among the tested variables is documented in a recent study of Cormier and Magnan (2007). In addition, the strong positive relationship between firm value measures and ED can be explained using stakeholder's theory. The theory supports that, if a company issues credible social and environmental reports to the investors this will decrease the prevailing uncertainty regarding the social responsibility practices of the company, and thereby enhancing the perceived firm prospects. This in turn will reward the company with improved firm value (Wang, 2016). It can be assumed that over the years the stakeholders in the GCC have become more responsive and have started to react to corporate environmental disclosure behaviors. This could possibly explain the enhanced relationships between the firm value (MC and EV) and quantity and quality of ED in 2015.

Similarly, the lack of significant relationship between cost of capital and ED is explained in studies like that of Clarkson, et al., (2010). Furthermore, in contradiction

with the agency theory, the cost of capital, in general shows positive regression results with ED. With the exception of CoE and CoD displaying negative relationship with QLED 2010 and QTED 2015 respectively.

In the context of GCC, it is important to consider the following situations in order to analyze the not so significant regression results. Firstly, enhanced ED is comparatively a recent trend in GCC. Secondly, the financial markets in GCC are still on the path of development (Gray & Blejer, 2007). Thus, it is only expected that financial figures will respond less to the non-financial disclosures of the company. On the other hand, the few significant regression results (ED and economic variables) in 2015 can be noted as a sign of improvement in the ED and the financial responsiveness of the firm variables over the years. This enhancement pattern in the corporate characteristics is a global phenomenon, and GCC follows the trend (Billmeier & Massa, 2007).

CHAPTER 6: CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

This chapter addresses the conclusions of the results inferred from the research, lists the study limitations and concludes with research ideas to take the study further.

6.1 Conclusion

With respect to the GCC economy, chemical and petrochemical sector are among the key value-adding sectors to the GDP in the region (GPCA, 2015). Besides, considering the environmental sensitivity, the companies operating in these sectors have a higher burden to involve in proactive environment protection and reporting activities (Tagesson, et al., 2009). Which is why the concept of CSR is mostly debated and improved among these sectors compared to other non-environmentally sensitive sectors. In most developing countries voluntary disclosures on environmental concerns are very limited (Blackman, et al., 2009; Kalu, et al., 2015) and GCC listed chemical and petrochemical sectors follows the similar trend.

This study analyzed the ED extent (QTED) and quality (QLED) among GCC sampled countries for two non-consecutive years i.e. 2010 and 2015. The results display statistics on how far the GCC as a whole and each individual GCC economy improved in terms of ED practices over the two selected years. The ontent analysis attempts to accommodate an inclusive set of environmentally vital measurement index for examining the quantity and quality of the prevailing ED practices among the GCC sampled

companies. Results show that QTED and QLED have improved over the studied years. On an average, from 2010 to 2015, QTED increased by 46% and QLED by 70%. Yet the total ED levels are low at a QTED and QLED mean of 0.32 and 0.18 respectively in 2015. One of the primary reasons behind such low disclosures are probably the shortage of reporting laws, poor enforceability of the existing mandatory regulations and lack of incentives for companies to adhere to voluntary benchmarking practices. Among the individual countries, with the exception of UAE, rest of the GCC economies exhibited an overall positive improvement in QTED and QLED in 2015. In UAE, the QTED mean decreased by 20% and QLED decreased by 18% in 2015.

The regression results examining the impact of ED on economic performance (firm value and cost of capital) provide interesting, yet consistent results (with prior literature). The regression results for the year 2010 show no probable relationship between ED and the selected financial indicators. Nevertheless, firm value (Market Capitalization and Enterprise Value) has identified highly positive relationship with ED in 2015. This is consistent with former studies of Clarkson, et al., (2013), Griffin & Sun (2012) Matsumura, et al., (2014) and Plumlee, et al., (2015). With respect to identifying the financial impact of ED, studies show that documentation of financial benefits availed due to better ED would lead to lesser extensive government regulations on social and environmental accounting (KPMG, 2011). Since, the companies will now be driven by economic motives and thereby willfully disclosing more information voluntarily.

The study has successfully investigated the ED of chemical and petrochemical sectors in the GCC region and has assessed its possible impact on selected financial

indicators. The study results add value to the existing academia of ED documentation and lays foundation to the future studies. Also, the empirical findings can be of interest to different segments of stakeholders of the company and the country; including shareholders, managers, customers, regulators and strategic policymakers. The results can be viewed as a benchmark for GCC environmental reporting practices and identify the scope for corporate reporting improvements. Thereby, assisting the firms to better understand the ED practices and compare it with its competitors. Furthermore, the improved positive relationship between ED and firm value over the years can act as a financial incentive for corporates to encourage environmental reporting.

In addition, the following action plans can be followed as measures to enhance the current situation. Firstly, considering the improving, yet low ED levels in the GCC region, authorities can formulate new environmental reporting strategies. Macro-level environmental safeguarding guidelines can be set by government authorities in alignment with the respective environmental vision statements of each GCC country. For instance, considering the low and declined ED, UAE can design and implement micro-level environmental protection policies with respect to the UAE Vision 2021. Thereby ensuring the practicality and reachability of these strategic environmental visions. Secondly, designing and Implementation is inadequate without efficient and effective follow up and control measures. Regular follow up at specific intervals are to be performed to confirm the environmental behavioral standards of corporate citizens. Moreover, corporates can set benchmarks of superior environmental reporting patterns within the industry. Also, in order to further encourage voluntary practices, financial or

non-financial incentives can be provided to companies as means of encouragement for high quality environmental disclosure. For example, utilities subsidiary for using environment friendly factory machines, awards and other recognition for best practice behavior can also be identified and rewarded within the industry.

6.2 Research Limitations

This study is subject to few limitations. Firstly, the sample size is rather small and is limited to only two primary sectors in the GCC region. Due to the difficulty in data collection, the study failed to include non-listed companies in the GCC. Thereby, creating an opportunity to undermine the comprehensive picture of environmental reporting practices in the sampled counties. Also, the study included data for only two years, including more financial years would have benefited the analysis in terms of conducting an in-depth panel discussion of time series analysis for ED practices and its impact on economic indicators. Secondly, samples from each individual GCC economies vary in size, which creates an issue of representativeness. For example, Bahrain has only two listed companies in the category of chemical and petrochemical sector. Whereas, Saudi Arabia has 26 companies in the same sector. Similarly, there can be of various other scientific methods and indexes to quantify and qualify the ED reporting practices more objectively. For instance, the index used in this study only uses 22 ED environmental items.

6.3 Scope for Future Studies

Future research can find another method to evaluate the ED practices among companies. More inclusive ED index can be instrumented by adding new disclosure items covering a broader area of environmental concerns. In addition, though this study was unable to verify any significant impact of ED on cost of capital measurements and Tobin's Q, it is possible with better proxies and proper aspects. This is an interesting field after all. In summary, the field of environmental reporting is yet to be studied in comprehensive terms. This study has investigated the ED practices pattern with respect to a small sample size. Higher research prospects lie in this area of corporate environmental reporting, especially in the Arab region. Correcting for the limitation in prior literature and this study, future studies can be conducted by using bigger sample size (listed and non-listed companies), longitudinal ED analysis and with broader ED index measurements.

REFERENCES

Abd Rahman, N. R., Johari, N. H. & Binti Mohamad, N. E., 2017. *Carbon Emission Disclsoure and the Cost of Capital: An analysis of Malaysian Capital Market.* s.l., ICGA.

Abu-Baker, N. & Naser, K., 2000. Empirical Evidence on Coeporate Social Disclosure (CSD) Practices in Jordan. *International Journal of Commerce and Management,* 10(3), pp. 18-34.

Adams, C. & Kuasirikun, N., 2000. A comparative analysis of corporate reporting on ethical issues by UK and German chemical and pharmaceutical companies. *European Accounting Review,* 9(1), pp. 53-79.

Adams, R., Hurd, B., Lenhart, S. & Leary, N., 1998. *Effects of global climate change on agriculture: an interpretative review,* Corvallis, USA: Oregon State University.

Aerts, W., Cormier, D. & Magnan, M., 2008. Corporate environmental disclosure, financial markets and the media: An international perspective. *Ecological Economics,* 64(3), pp. 643-659.

Ahmed, N. N. & Sulaiman, m., 2004. Environment disclosure in Malaysia annual reports: A legitimacy theory perspective. *nternational Journal of Commerce and Management,* 14(1), pp. 44-58.

Ahulu, H., Kotey, B. & Al Farooque, O., 2010. *Advances in Environmental Reporting among Australian MNEs using GRIs Guidelines.*Sydney, Australia, International Conference on Corporate Governance.

Akrout, M. & Othman, H., 2013. A Study of the Determinants of Corporate

Environmental Disclosure in MENA Emerging Markets. *Journal of Reviews on Global Economics,* Volume 2, pp. 46-59.

Alattar, J. & Khater, K., 2008. An empirical investigation of users' views on corporate annual reports in Qatar. *International Journal of Commerce and Management,* 17(4), pp. 312-325.

Aljifri, K., 2008. Annual report disclosure in a developing country: The case of the UEA. *Advances in Accounting,* Volume 24, pp. 93-100.

Al-Khadash, H., 2003. The accounting disclosure of social and environmental activities: A comparative study for the industrial Jordanian shareholding companies.. *Abhath Al-Yarmouk Journal: Humanities and Social Sciences,* Volume 19, pp. 21-39.

Al-Mutairi, A., Smallbone, A., Al-Salem, S. & Roskilly, A., 2017. The first carbon atlas of the state of Kuwait. *Energy,* Volume 133, pp. 317-326.

AlNaimi, H. A., Hossain, M. & Momin, M. A., 2012. Corporate social responsibility reporting in Qatar: a descriptive analysis. *Social Responsibility Journal,* 8(4), pp. 511-526.

Al-Razeen, A. & Karbhari, Y., 2004. Interaction between compulsory and voluntary disclosure in Saudi Arabian corporate annual reports. *Interaction between compulsory and voluntary disclosure in Saudi Arabian corporate annual reports,* 19(3), pp. 351-360.

Alsaeed, K., 2006. The association between firm-specific characteristicsand disclosure: the case of Saudi Arabia. *Managerial Auditing Journal,* 21(5), pp. 476-496.

Al-Shammari, B., 2008. Voluntary disclosure in Kuwait corporate annual reports. *Review*

of Business, Volume 1, pp. 10-30.

Al-Tuwaijri, S. A., Christensen, T. E. & Hughes, K., 2004. The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach. *Accounting, Organizations and Society,* 29(5-6), pp. 447-471.

Aly, D. & Simon, J., 2008. *Assessing the development of voluntary internet financial reporting and disclosure in Egypt.* Blackpool, UK, Paper presented at the British Accounting Association Conference.

Ansoff, H. I., 1965. *Corporate Strategy.* New York: McGraw-Hill.

Bahlous, M., 2013. Does Cross-Listing Benefit the Shareholders? Evidence from Companies in the GCC Countries?. *Asia-Pacific Financial Markets,* 20(4), pp. 345-381.

Bahrain Economic Development Board, 2008. *From Regional Pioneer to Global Contender: The Economic Vision 2030 for Bahrain,* Bahrain: EDB.

Barako, D., Hancock, P. & Y, I., 2006. Factors influencing voluntary corporate disclosure by Kenyan companies. *Corporate Governance: International Review,* 14(2), pp. 107-125.

Barkemeyer, R., 2007. Legitimacy as a Key Driver and Determinant of CSR in Developing Countries. *University of St Andrews.*

Bayoud, N. S., Kavanagh, M. & Slaughter, G., 2012. Factors Influencing Levels of Corporate Social Responsibility Disclosure by Libyan Firms: A Mixed Study. *International Journal of Economics and Finance,* 4(4).

Belkaoui, A., 1976. The Impact of the Disclosures of the Environmental Effects of Organizational Behaviour on the Market. *Financial Management,* pp. 31-56.

Belkaoui, A. & Karpik, P. G., 1989. Determinants of the Corporate Decision to Disclose Social Information. *Accounting, Auditing & Accountability Journal,* 2(1).

Bewley, K. & Li, Y., 2000. Disclosure of environmental information by Canadian manufacturing companies: a voluntary disclosure perspective. *Advances in Environmental Accounting and Management,* Volume 1, pp. 201-226.

Billmeier, A. & Massa, I., 2007. What Drives Stock Market Development in the Middle East and Central Asia--Institutions, Remittances, or Natural Resources?. *IMF Working Paper No. 07/157.*

Blacconiere, W. G. & Patten, D. M., 1993. Environmental disclosures, regulatory costs, and changes in firm value. *Journal of Accounting and Economics* , Volume 18, pp. 357-377.

Blackman, A., Uribe, E., Hoof, B. & Lyon, T., 2015. Voluntary Environmental Agreements in Developing Countries: The Colombian Experience. *RFE report*.

Blair, T., 2009. *Vision Kuwait 2030: Final Report,* Kuwait: s.n.

Bonetti, P., Cho, C. & Michelon, G., 2015. Environmental Disclosure and the Cost of Capital: Evidence from the Fukushima Nuclear Disaster. *SSRN Working paper.*

Boshnak, H., 2017. Mandatory and voluntary disclosures in GCC listed firms. *University of the West of England.*

Botosan, C., 1997. Disclosure level and the cost of equity capital. *Accounting Review ,*

Volume 72, pp. 323-349.

Botosan, C. & Plumlee, M., 2000. Disclosure Level and Expected Cost of Equity Capital: An Examination of Analysts' Rankings of Corporate Disclosure. *Working paper, University of Utah.*

Branco, M. & Rodrigues, L., 2008. Factors Influencing Social Responsibility Disclosure by Portuguese Companies. *Journal of Business Ethics,* 83(4), pp. 685-701.

Buniamin, S., Alrazi, B., Johari, N. H. & Abd Rahman, N., 2011. Corporate Governance Practices and Environmental Reporting of Companies in Malaysia: Finding Possibilities of Double Thumbs Up. *Jurnal Pengurusan,* Volume 32, pp. 55-71.

Calace, D., 2014. Non-Financial Reporting in Italian SMEs: An Exploratory Study on Strategic and Cultural Motivations.. *International Journal of Business Administration,* 5(3), pp. 34-48.

Campbell, D., 2004. A longitudinal and cross-sectional analysis of environmental disclosure in UK companies—a research note. *The British Accounting Review,* Volume 36, pp. 107-117.

Chatterjee, B. & Mir, M. Z., 2008. The current status of environmental reporting by Indian companies. *Managerial Auditing Journal,* 23(6), pp. 609-629.

Chemical Watch, 2009. *Chemicals Regulation in the Middle East – an overview,*s.l.: Chemical Watch.

Chen, L., Feldmann, A. & Tang, O., 2015. The relationship between disclosures of corporate social performance and financial performance: Evidences from GRI reports in manufacturing industry. *International Journal of Production*

Economics.

Cheynel, E., 2013. A theory of voluntary disclosure and cost of capital. *Review of Accounting Studies,* 18(4), pp. 987-1020.

Cho, C. H. & Patten, D. M., 2007. The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society,* 32(7-8), pp. 639-647.

Cho, C., Michelon, G., Patten, D. & Roberts, R., 2015. CSR disclosure: the more things change…?. *ccounting, Auditing & Accountability Journal,* 28(1), pp. 14-35.

Choi, J.-S., 1999. An investigation of the initial voluntary environmental disclosures made in Korean semi-annual financial reports. *Pacific Accounting Review,* 11(1), pp. 73-102.

Clarkson, P., Fang, X., Li, Y. & Gordon, R., 2010. The Relevance of Environmental Disclosures For Investors and Other Stakeholder Groups: Are Such Disclosures Incrementally Informative?. *SSRN Electronic Journal.*

Clarkson, P., Fang, X., Li, Y. & Gordon, R., 2010. The Relevance of Environmental Disclosures For Investors and Other Stakeholder Groups: Are Such Disclosures Incrementally Informative?. *SSRN Electronic Journal.*

Clarkson, P., Fang, X., Li, Y. & Richardson, G., 2013. The relevance of environmental disclosures: Are such disclosures incrementally informative?. *Journal of Accounting and Public Policy,* 32(5), pp. 410-431.

Clarkson, P., Li, Y. R., G.D. & Vasvari, F., 2011. Does it really pay to be green?Determinants and consequences of proactive environmental strategies

Journal of Accounting and, 30(2), pp. 122-44.

Clarkson, P., Li, Y., Richardson, G. & Vasvari, F., 2008. Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, 33(4-5), pp. 303-327.

Clavier, J., M., J. & F., C., 2006. *PNEC. The French coastal environment programme.*.

Cormier, D. & Gordon, I., 2001. An examination of social and environmental reporting strategies. *Accounting, Auditing & Accountability Journal*, 14(5), pp. 587-617.

Cormier, D., Ledoux, M. & Magnan, M., 2011. The informational contribution of social and environmental disclosures for investors. *Management Decision*, 49(8), pp. 1276-1304.

Cormier, D. & Magnan, M., 2007. The revisited contribution of environmental reporting to investors' valuation of a firm's earnings: An international perspective. *Ecological Economics*, 62(3-4), pp. 613-626.

Cormier, D. & Mangan, M., 1999. Corporate Environmental Disclosure Strategies: Determinants, Costs and Benefits. *Journal of Accounting, Auditing and Finance*, 14(4), pp. 429-451.

Cowen, S., Ferreri, L. & Parker, L., 1987. The impact of corporate characteristics on social responsibility disclosure: A typology and frequency-based analysis. *Accounting, Organizations and Society*, 12(2), pp. 111-122.

Dammak, S., 2015. Human Capital Disclosure and Market Capitalization. *Corporate Ownership & Control*, 13(1).

Dasgupta, S., Hong, J., Laplante, B. & Mamingi, N., 2006. Disclosure of environmental

violations and stock market in the Republic of Korea. *Ecological Economics,* 58(4), pp. 759-777.

Day, R. & Woodward, T., 2004. Disclosure of Information About Employees in the Directors‟ Report of UK Published Financial Statements: Substantive or Symbolic?. *Accounting Forum,,* 28(1), pp. 43-59.

Deegan, C., 2002. Introduction: The legitimising effect of social and environmental disclosures – a theoretical foundation. *Accounting, Auditing & Accountability Journal,* 15(3), pp. 282-311.

Deegan, C. & Gordon, B., 1996. A Study of the Environmental Disclosure Practices of Australian Corporations. *Accounting and Business Research,* 26(3), pp. 187-199.

Deegan, C. & Rankin, M., 1999. The Environmental Reporting Expectations Gap: Australian Evidence. *British Accounting Review,* Volume 31, pp. 313-346.

Dejean, F. & Martinez, I., 2009. Environmental Disclosure and the Cost of Equity: The French Case. *Accounting in Europe,* 6(1).

Desoky, A. M., 2009. Company characteristics as determinants of Internet financial reporting in emerging markets: the case of Egypt. In: M. Tsamenyi & S. Uddin, eds. *Accounting in Emerging Economies (Research in Accounting in Emerging Economies.* s.l.:Emerad Group Publishing Limited, pp. 31-71.

Devaux, P., 2013. “Economic diversification in the GCC: dynamic drive needs to be confirmed. *Conjoncture.*

Dhaliwal, D., Li, O., Tsang, A. & Yang, Y., 2011. Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility

Reporting. *The Accounting Review,* 86(1), pp. 59-100.

DiMaggio, P. J. & Powell, W. W., 1983. The iron cage revisited" institutional isomorphism and collective rationality in organizational fields. *American Sociological Review,* Volume 48, pp. 147-160.

Djajadikerta, H. & Trireksani, T., 2012. Corporate Social and Environmental Disclosure by Indonesian listed Companies on Their Corporate Web Sites.. *Journal of Applied Accounting Research,* 13(1), pp. 21-36.

Dong, S., Burritt, R. & Qian, W., 2014. Salient stakeholders in corporate social responsibility reporting by Chinese mining and minerals companies. *Journal of Cleaner Production,* Volume 84, pp. 59-69.

Du, X., Jian, W., Zeng, Q. & Du, Y., 2013. Corporate Environmental Responsibility in Polluting Industries: Does Religion Matter?. *Journal of Business Ethics,* 124(3), pp. 485-507.

Eljayash, K., James, K. & Kong, E., 2012. The quantity and quality of environmental disclosure in annual report of national oil and gas companies in Middle East and North Africa. *International Journal of Economics and Finance,* 4(10), pp. 201-217.

Eljayash, K. M., 2015. Documentation of Environmental Disclosure Practices in the Oil Companies in the Countries of the Arab Spring –Some Evidences from Egypt, Libya and Tunisia. *Journal of Economics, Business and Management,* 3(10).

Eljayash, K. M., Kavanagh, M. & Kong, E., 2013. ENVIRONMENTAL Disclosure Practices In National Oil And Gas Organization Of Arab Petroleum Exporting

Countries. *International Journal of Business, Economics and Law*, 2(1).

Elsayed, M. & Hoque, Z., 2010. Perceived international environmental factors and corporate voluntary disclosure practices: an empirical study. *The British Accounting Review*, 42(1), pp. 17-35.

Espinoza, J. et al., 2010. Climate variability and extreme drought in the upper Solimões River (western Amazon Basin): Understanding the exceptional 2010 drought. *Geophysical Researc Letter*, Volume 38.

Ettredge, M., J.Richardson, V. & Scholz, S., 2002. Dissemination of information for investors at corporate Web sites. *Journal of Accounting and Public Policy*, 21(4-5), pp. 357-369.

Fama, E. F. & Miller, M. H., 1972. *The Theory of Finance.* Illinois: The University of Chicago.

Fama, E. & French, K., 1992. The Cross-Secction of Expected Stock Returns. *The Journal of Finance*, 47(2), pp. 427-465.

Fortes, H., 2002. The Need for environmental reporting by companies. *Greener Management International* , pp. 77-92.

Freedman, M. & Patten, D., 2004. Evidence on the Pernicious Effect of FinancialReport Environmental Disclosure. *Accounting Forum*, 28(1), pp. 27-41.

Freeman, R. E., 1983. Strategic Management: a Stakeholder Approach. *Advances in Strategic Management*, pp. 31-60.

Freeman, R. E., 1984. *Strategic Management: A Stakeholder Approach.* 1 ed. Massachusetts: Harpercollins College Division.

Frost, G., 2007. The Introduction of Mandatory Environmental Reporting Guidelines: Australian. *ABACUS,* 43(2), pp. 190-216.

Gamble, G., Hsu, K., Kite, D. & Radtke, R., 1995. Environmental disclosures in annual reports and 10Ks: an examination. *Accounting Horizons,* 9(3), pp. 34-54.

Gana, M. N. R. & Dakhlaoui, M., 2011. Societal Information Disclosure and the Cost of Equity: the Case of Tunisian Companies. *Global Journal ofManagement And Business Research,* 11(7).

Garcia-Martinez, P. & Colacelli, M., 2016. *Economic Prospects and Policy Challenges for the GCC Countries,* Saudi Arabia: International Monetary Fund (IMF).

GCC-STAT, 2015. *GCC-STAT Annual Report 2015,* s.l.: GCC-STAT.

g, G., 1234. scverv. *svdvd.*

Global Reporting Initiative, 2015. *G4 Sustainability Reporting Guidelines,* s.l.: Global Reporting Initiative.

Goswami, M., 2014. Corporate Environmental Accounting: the issue, its practices and challenges: A study on Indian corporate accounting practices. *Journal of Business and Management* , 16(5), pp. 36-42.

Graham, J. R., Harvey, C. & Rajgopal, s., 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics,* 40(1-3), pp. 3-73.

Gray, R., Javad, M., Power, D. & Singlair, C., 2001. Social and Environmental Disclosure Corporate Characteristics: a Research Note and Extension. *Journal of Business Finance & Accounting,* 28(3).

Gray, R., Kouhy, R. & Lavers, S., 1995. "Corporate social and environmental reporting: a

review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journa,* 8(2), pp. 47-77.

Gray, R., Kouhy, R. & Lavers, S., 1995. Corporate social and environmental reporting: a review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journal,* 8(2), pp. 47-77.

Gray, R., Owen, D. & Maunders, K., 1987. *Corporate Social Reporting : Accounting and Accountabilit,* UK: rentice Hall International UK.

Gray, S. & Blejer, M., 2007. The Gulf Cooperation Council Region: Financial Market Development,Competitiveness, and Economic Growth. In: D. Hanouz, E. Diwany & T. Yousef, eds. *World Economic Forum —The Arab World Competitiveness Report 2007.* Basingstoke: Palgrave Macmillan.

Griffin, J. J. & Mahon, J. F., 1997. The corporate social performance and corporate The corporate social performance and corporate financial performance debate: Twenty-five years of incomparable research. *Business and Society,* Volume 36, pp. 5-31.

Griffin, P. & Sun, Y., 2012. Going green: Market reactions to CSR newswire releases. *Retrieved 1 March 2016, from http://www.csrwire.com/press_releases/33757-New-Research-Voluntary-Disclosure-Produces-Positive-Returns-for-Shareholders.*

Grossman, S. J. & Hart, O. D., 1982. Corporate Financial Structure and Managerial Incentives. In: J. J. McCall, ed. *The Economics of Information and Uncertainty.* London: University of Chicago Press, pp. 107-140.

Gulf Petrochemical and Chemicals Association, 2011. *GPCA annual Report 2011,* Dubai, United Arab Emirates: GPCA.

Gulf Petrochemicals & Chemicals Association, 2014. *GPCA Annual Report 2014,* Dubai, United Arab Emirates: GPCA.

Gulf Petrochemicals & Chemicals Association, 2016. *GPCA Annual Report 2016,* Dubai, United Arab Emirates: GPCA.

Gulf Petrochemicals and Chemicals Association, 2013. *GPCA Annual Report 2013,* Dubai, United Arab Emirates: GPCA.

Gulf Petrochemicals and Chemicals Association, 2015. *GPCA Facts and Figures 2015,* Dubai, United Arab Emirates: GPCA.

Guthrie, J. & Parker, L., 2012. Corporate Social Reporting: A Rebuttal of Legitimacy Theory. *Accounting and Business Research,* 19(76), pp. 343-352.

Guthrie, J., Petty, R., Yongvanich, K. & Ricceri, R., 2004. Using content analysis as a research method to inquire into intellectual capital reporting. *Journal of Intellectual Capital,* 5(2), pp. 282-293.

Hackston, D. & Milne, M., 1996. Some determinants of social and environmental disclosures in New Zealand companies. *Accounting, Auditing & Accountability Journal,* 9(1), pp. 77-108.

Hang, S. & chunguang, Z., 2015. Does environmental management improve enterprise's value? – An empirical research based on Chinese listed companies. *Ecological indicators,* Volume 51, pp. 191-196.

Haniffa, R. & Cooke, T., 2005. The impact of culture and governance on corporate social

reporting. *Journal of Accounting and Public Policy,* 24(5), pp. 391-430.

Harte, G. & Owen, D., 1991. Environmental Disclosure in the Annual Reports of British Companies: A Research Note. *Accounting, Auditing & Accountability Journal,* 4(3).

He, C. & Loftus, J., 2014. Does environmental reporting reflect environmental performance? Evidence from China. *Pacific Accounting Review*, 26(1-2), pp. 134-154.

Hongjun, W. & Xiaobo, s., 2010. Environmental Disclosure, Environmental Performance and Firm Value.

Hossain, M. & Hammami, H., 2009. Voluntary Disclosure in the Annual Reports of an Emerging Country: The Case of Qatar. *ncorporating International Advances in Accounting,* Volume 25, pp. 255-65.

Huang, C.-L. & Kung, F.-H., 2010. Drivers of Environmental Disclosure and Stakeholder Expectation: Evidence from Taiwan. *Journal of Business Ethics,* Volume 96, pp. 435-451.

Huang, P., Louwers, T. J., Moffitt, J. S. & Zhang, Y., 2008. Ethical Management, Corporate Governance, and Abnormal Accruals. *Journal of Business Ethics,* 83(3), pp. 469-487.

Hua, X. & Guoqing, Z., 2008. Public Pressure and Corporate Environmental Disclosure-Empirical Study Based on Songhua River Pollution Accident. *AccountingResearch,* pp. 15-22.

Husain, A. et al., 2015. Global Implications of Lower Oil Priices. *IMF staff Discussion*

Paper.

Hvidt, M., 2013. Economic diversification in GCC countries: Past record and future trends. *The Lodon School of Economics and Political Science*.

Ingram, R. & Frazier, K., 1980. Environmental Performance and Corporate Disclosure. *Journal of Accounting Research*, 18(2), pp. 614-622.

Ingram, R. W., 1978. An investigation of the information content of (certain) social responsibility Disclosure. *Journal of Accounting Research*, 16(2), pp. 614-622.

Ioannou, I. & Serafeim, G., 2015. The impact of corporate social responsibility on investment recommendations: Analysts' perceptions and shifting institutional logics. *Strategic Management Journal*, 36(7), pp. 1053-1081.

Islam, M. & Deegan, C., 2007. Motivations for an organization within a developing country to report social responsibility information. *Accounting Auditing & Accountability* , Volume 21, pp. 850-874.

Jahamani,Y.F., 2003. Green accounting in developing countries: The case of UAE and Jordan. *Managerial Finance*, Volume 29, pp. 37-45.

Jenkins, H. & Yakovleva, 2006. Corporate social responsibility in the mining industry: Exploring trends in social and environmental disclosure. *Journal of Cleaner Production*, 14(3), pp. 271-284.

Jensen, M. C. & Meckling, W. H., 1976. Theory of the firm: Managerial behaviour. Agency cost and capital structure. *Journal of Financial Economics*, Volume 3, pp. 305-360.

Juhmani, O., 2014. Determinants of Corporate Social and Environmental Disclosure on

Websites: the Case of Bahrain. *Universal Journal of Accounting and Finance,* 2(4), pp. 77-87.

Kalu, J.U., Aliagha, G.U. & Buang, A., 2015. A Review of Economic Factors Influencing Voluntary Carbon Disclosure in the Property Sector of Developing Economies. *Journal of Physics: IOP Conference Series.*

Kaya, U. & Yayla, H., 2007. Remembering Thirty-five Years of Social Accounting: A Review of the Literature and the Practice. *MPRA Paper,* pp. 1-26.

Kercher, K., 2007. Corporate Social Responsibility: Impact of globalisation and international business. *corporate Governance eJournal.*

Khasharmeh, H. A. & Desoky, A. M., 2013. On-line Corporate Social Responsibility Disclosures: The Case of the GCC Countries. *Global Review of Accounting and Finance,* 4(2), pp. 39-64.

KPMG (2011). *KPMG International survey of corporate responsibility reporting 2011*. Amsterdam, Netherlands: KPMG Sustainability Services

Kuo, L. & Chen, V. Y.-J., 2013. Is environmental disclosure an effective strategy on establishment of environmental legitimacy for organization?. *Management Decision,* 51(7), pp. 1642-1487.

Lang, M. & Lundholm, R., 1996. Corporate Disclsoure Policy and Analyst Behavior. *The Accounting Review,* 71(4), pp. 467-492.

Lee, D. E. & Tompkins, J. G., 1999. A Modified Version of the Lewellen and Badrinath Measure of Tobin's Q. *Financial Management,* 28(1).

Lindenberg, E. & Ross, S., 1981. Tobin's q Ratio and Industrial Organization. *The*

Journal of Business, 54(1), pp. 1-32.

Liu, Q. & Lu, Z., 2007. Corporate governance and earnings management in the Chinese listed companies: A tunneling perspective. *Journal of Corporate Finance,* 13(5), pp. 881-906.

Lu, G., 2008. *Study on phosphorus flow in family system and influence on environment in,* China: Agricultural University of Hebei.

Lu, Y. and Abeysekera, I. (2014), Social and Environmental Disclosure by Chinese Firms, Routledge, New York, NY.

Mak, Y., 1991. Corporate characteristics and the voluntary disclosure of forecast information: A study of New Zealand prospectuses. *The British Accounting Review,* 23(4), pp. 305-327.

Manaf, N. A., Atan, R. & Mohamed, N., 2006. *Environmentally sensitive companies social responsibility and reporting: A study of Malaysian companies.* New Zealand, The Australasian Conference on Social and Environmental Accounting Research, Victoria University of Wellington.

Margolis, J. & Walsh, J., 2003. Misery Loves Companies: Rethinking Social Initiatives by Business. *Administrative Science Quarterly,* 48(2), pp. 268-305.

Mathew, M., 1993. *Socially Responsible Accounting.* UK: Chapman and Hall.

Matsumura, E., Prakash, R. & Vera-Munoz, S., 2014. Firm-Value Effects of Carbon Emissions and Carbon Disclosure. *American Accounting Association,* 89(2), pp. 695-724.

Mbekomize, C. J. & Wally-Dima, L., 2013. Social and Environmental Disclosure by

Parastatals and Companies Listed on the Botswana Stock Exchange. *Journal of Management and Sustainability,* 3(2).

Meltzer, J., E.Hultman, N. & Langley, C., 2014. Low-Carbon Energy Transitions in Qatar and the Gulf Cooperation Council Region. *Brookings Papers on Economic Activity.*

Milne, M. J. & Patten, D. M., 2002. Securing organizational legitimacy: An experimental decision case examining the impact of environmental disclosures. *Accounting, Auditing & Accountability Journa,* 15(3), pp. 372-405.

Ministry of Development, 1996. *2020 Vision for Oman's Economy,* Muscat, Oman: Ministry of Development.

Mohamed, T. & Faouzi, J., 2014. Does Corporate Environmental Disclosure Affect the Cost of Capital? Evidence from Tunisian Companies. *Global Journal of Management and Business* , 14(1).

Moneva, J. & cuellar, B., 2009. The Value Relevance of Financial and Non-Financial Environmental Reporting. *Environmental and Resource Economics,* 44(3), pp. 441-456.

Naser, K., 1998. Comprehensives of disclosure of non-financial companies listed on the Amman financial market. *International Journal of Commerce and Management,* 2(8), pp. 88-119.

Naser, K., Al-Hussaini, A., Al-Kwari, D. & Nuseibeh, R., 2006. Determinants of corporate social disclosure in developing countries: the case of Qata. *Advances in International Accounting,,* Volume 19, pp. 1-23.

Naser, K. & Al-Khatib, K., 2000. Determinants of the depth of voluntary disclosure in the board of directors' statement in a sample of Jordanian listed companies. *Advances in International Accounting,* Volume 13, pp. 99-118.

Neimark, M. & Tinker, T., 1987. Identity and Non-Identity Thinking: Dialectical Critique of the Transaction Cost Theory of the Modern Corporation. *Journal of Management,* 13(4), pp. 661-673.

Ness, K. & Mirza, A., 1991. Corporate social disclosure: A note on a test of agency theory. *The British Accounting Review,* 23(3), pp. 211-217.

Nor, N. et al., 2016. The Effects of Environmental Disclosure on Financial Performance in Malaysia. *Procedia Economics and Finance,* Volume 35, pp. 117-126.

O'Connor, L., 2006. "Empirical research in social and environmental.

O'Donovan, G., 2002. Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory. *Accounting, Auditing & Accountability Journal,* 15(3), pp. 344-371.

Olayinka, A. & Oluwamayowa, I., 2014. Corporate environmental disclosures and market value of quoted companies in Nigeria. *The Business & Management Review,* 5(3).

Omran, M. & El-Galfy, A., 2014. Theoretical perspectives on corporate disclosure: a critical evaluation and literature survey. *Asian Review of Accounting,* 22(3), pp. 257-286.

Orlitzky, M., Schmidt, F. L. & Rynes, S. L., 2003. Corporate social and financial performance: A meta-analysis. *Organizational Studies,* 24(3), pp. 403-441.

Palmquist, M., 1990. *Content Analysis,* United States: Colorado State University.

Parsa, S. & Kouhy, R., 2008. Social Reporting by Companies Listed on the Alternative Investment Market. *Journal of Business Ethics,* 79(3), pp. 345-360.

Patten, D., 1991. Exposure, legitimacy, and social disclosure. *Journal of Accounting and Public Policy,* 10(4), pp. 297-308.

paul, K. & Pal, B., 2001. Corporate Environmental Reporting in India. *Indian Accounting Review,* pp. 27-45.

Perks, R., 1993. *Accounting and Society.* London: Chapman and Hall..

Pled, V. & Latridis, E., 2012. corporate Social Responsibility reporting: Evidence from environmentally sensitive industries in the USA. *International Review of Accounting, Banking & Finance,* 4(2), pp. 61-99.

Plumlee, M., Brown, D., Hayes, R. & Marshall, R., 2015. Voluntary environmental disclosure quality and firm value: Further evidence. *Journal of Accounting and Public Policy,* 34(4), pp. 336-361.

Plumlee, M., Brown, D., Hayes, R. & Marshall, S., 2010. Voluntary Environmental Disclosure and Firm Value: Further Evidence.. *Working paper, University of Utah.*.

Plumlee, M., Brown, D. H. R. M. & Marshall, R. S., 2015. Voluntary environmental disclosure quality and firm value: Further evidence. *Journal of Accounting and Public Policy,* 34(4), pp. 336-361.

Pozniak, L., P., F., Armone, L. & Geerts, A., 2011. Determinants of Internet corporate social responsibility communication. *Global Journal of Business Research,* 5(4), pp. 1-14.

Pramanik, A., Shil, N. & Das, B., 2009. Corporate Environmental Reporting: An Emerging Issue in the Corporate World. *International Journal of Business and Management,* 3(12), p. 146.

Prastiwi, A., Subroto, B., Rosidi & Nurkholis, 2007. Determination of Social and Environmental Disclosure: A Review on Prior Research. *International Journal of Management and Administrative Sciences,* 3(8), pp. 37-56.

Qatar MDPS (Ministry of Development Planning and Statistics), 2008. *Qatar National Vision 2030,* doha, Qatar: Qatar: General Secretariat for Development Planning and Statistics.http://www.gsdp.gov.qa/portal/page/portal/gsdpen/qatar-national-vision/qnv_2030_document.

Ragothaman, S. & Carr, D., 2008. The Impact of Environmental Information Disclosures on Shareholder Returns in a Company: An Empirical Study. *International Journal of Management,* 25(3), p. 613.

Relch, R. B., 1998. The New Meaning of Corporate Social Responsibility. *California Management Review,* 40(2).

Reverte, C., 2009. Determinants of Corporate Social Responsibility Disclosure Ratings by Spanish Listed Firms. *Journal of Business Ethics,* Volume 88, pp. 351-366.

Richardson, A. j. & Welker, M., 2001. Social disclosure, financial disclosure and the cost of capital of equity capital. *Accounting Organizations and Society,* 26(7), pp. 97-616.

Rockness, J. W., 1985. An assessment of the relationship between US corporate

environmental performance and disclosure. *Journal of Business Finance & Accounting*, 12(3), pp. 339-354.

Romlah, J., Takiah, M. & Jusoh, M., 2003. An investigation of Environmental Disclosure in Malaysia. *Universiti Kebangsaan Malaysia.*

Sahay, A., 2004. Environmental reporting by Indian corporations. *Corporate Social Responsibility and Environmental Management*, 11(1), pp. 12-22.

Sass, E., 2008. *Consumers consider sustainability in choosing brands,* s.l.: MediaPost Publications Retrieved online from http://publications.mediapost.com/index.cfm?fuseaction=Articles.showArticleHomePage&art aid=74117 .

Saudi Gazette, 2016. *Saudi Arabia's vision 2030,* Saudi Arabia: Saudi Gazette.

Schiager, H. & Haukvik, G. D., 2012. The effect of voluntary environmental disclosure on firm value : a study of Nordic listed firms. *Norwegian School of Economics* .

Sengupta, P., 1998. Corporate Disclosure Quality and the Cost of Debt. *The Accounting Review,* 73(4), pp. 459-474.

Sen, M., Mukherjee, K. & Pattanayak, J., 2011. Corporate environmental disclosure practices in India. *Journal of Applied Accounting Research,* 12(2), pp. 139-156.

Setiadi, I., Rahmawati, S. D. & Djuminah, 2017. Board Independence, environmental Disclosure, and Firm Value. *Review of Integrative Business and Economics Research,* Volume 4, p. 6.

Shirley, C., Suan, A. & Leng, C., 2009. 'Corporate social responsibility reporting in Malaysia: An analysis of Website reporting of Second Board companies listed in

Bursa Malaysia. *SEG Review,* 2(2), pp. 85-98.

Singh, P. J., Sethuraman, K. & Lam, J. Y., 2017. Impact of Corporate Social Responsibility Dimensions on Firm Value: Some Evidence from Hong Kong and China. *Sustainability,* 9(9).

Smith, J. v., Adhikari, A. & Tondkar, R. H., 2005. Exploring Differences in Social Disclosures Internationally: A Stakeholder Perspective. *Journal of Accounting and Public Policy,* Volume 24, pp. 123-151.

Smith, M., Yahya, K. & Amiruddin, A., 2007. Environmental disclosure and performance reporting in Malaysia. *Asian Review of Accounting,* 15(2), pp. 185-199.

Smith, M., Yahya, K. & Amiruddin, A., 2007. Environmental disclosure and performance reporting in Malaysia. *Asian Review of Accounting,* 15(2), pp. 185-199.

Spence, C. & Gray, R., 2008. *Social and Environmental Reporting and the Business Case.* London: Association of Chartered Certified Accountants.

Spicer, B., 1978. Market Risk, Accounting Data and Companies Pollution Control Records. *Journal of Business Finance & Accounting,* 5(1), pp. 67-83.

Suttipun, M. & Stanton, P., 2012. Determinants of Environmental Disclosure in Thai Corporate Annual Report. *International Journal of Accounting and Financial Reporting,* 2(1).

Tagesson, T., Blank, V., Broberg, P. & Collin, S., 2009. What Explains the Extent and Content of Social and Environmental Disclosures on Corporate Websites: A Study of Social and Environmental Reporting in Swedish Listed Corporations, Corporate Social - Responsibility and Environmental Management. 16(6), p. 352.

Thompson, P., 2002. Corporate environmental reporting in Singapore and Malaysia: Progress and Prospects. *The Centre for Europe Asia Business Research, Nottingham University Business School,* p. .

Tinker, T. & Gray, R., 2003. Beyond a critique of pure reason: from policy to politics to praxis in environmental and social research. *Accounting, Auditing & Accountability Journal,* 16(5), pp. 727-761.

Toms, S., 2002. Firm Resources, Quality Signals and the Determinants of Corporate Environmental Reputation: Some UK Evidence. *The British Accounting Review,* Volume 34, pp. 257-282.

Trotman, K. & Bradley, G., 1981. Associations between social responsibility disclosure and characteristics of companies. *Accounting, Organizations and Society,* 6(4), pp. 355-362.

UAE Cabinet, 2010. *Vision 2021,* Dubai, United Arab Emirates: UAE Cabinet.

Ullmann, A., 1985. Data in Search of a Theory: a Critical Examination of the Relationship Among Social Performance, Social Disclosure, and Economic Performance. *Academy of Management Review,* pp. 540-577.

Wallace, R. O., Nase, K. & Mora, A., 1994. The Relationship Between the Comprehensiveness of Corporate Annual Reports and Firm Characteristics in Spain. *Accounting and Business Research,* 25(97), pp. 41-53.

Wallace, R. O. & Naser, K., 1995. Firm-specific determinants of the comprehensiveness of mandatory disclosure in the annual corporate reports of firms listed on the stock exchange of Hong Kong. *Journal of Accounting and Public policy,* Volume

14, pp. 311-368.

Wang, R., 2016. Determinants of Companies' Environmental Information Disclosure in China. *Alto University, School of Business.*

Williams, J., 1987. Perquisites, Risk, and Capital Structure. *The Journal of Finance,* 42(1), pp. 29-48.

Wiseman, J., 1982. An evaluation of environmental disclosures made in corporate annual reports. *Accounting, Organizations and Society,* 7(1), pp. 53-63.

Xuan, Z., Lieke, Z. & Yuwei, S., 2014. Environmental Information Disclosure of Listed Company Study on the Cost of Debt Capital Empirical Data: Based on Thermal Power Industry. *Canadian Social Science,* 10(6), pp. 88-94.

Yang, L. Y. & Tang, D., 2013. Carbon Information Disclosure of Enterprises and their Value Creation Through Market Liquidity and Cost of Equity Capital. *Journal of Industrial Engineering and Management,* 8(1), pp. 137-151.

Yusoff, H. & Lehman, G., 2005. *International differences on corporate environmental disclosure practices: A comparison between Malaysia and Australia.* Australia, University of South Australia.

Zeng, S., Xu, X., Yin, H. & Tam, C., 2012. Factors that Drive Chinese Listed Companies in Voluntary Disclosure of Environmental Information. *Journal of Business Ethics,* 109(3), pp. 309-321.

Zubek, F. & Loverove, I., 2009. Human resource disclosure: Practice and influences in the Libiyan oil industry. *International Journal of Knowledge, Culture and Change management,* 9(7), pp. 1-14.

Zubek, F. & Mashat, A., 2015. Corporate Social and Environmental Responsibility Disclosure (CSRD) by Qatar Listed Companies on their Corporate Web Sites. *University Bulletin*, 1(17), pp. 109-134.

APPENDICES

Appendix A: Sample companies

No.	Companies (Annual or CSR Report available)
Saudi Arabia	
1	Rabigh Refining & Petrochemical Co.
2	The National Shipping Co. of Saudi Arabia BAHRI
3	Saudi Arabian Mining Co. MAADEN
4	National Petrochemical Co. PETROCHEM
5	Saudi Basic Industries Corp. SABIC
6	National Gypsum Co. NGCO
7	Alujain Corporation ALCO
8	Saudi Chemical Co. SCCO
9	Saudi International Petrochemical Co. SIPCHEM
10	Yamamah Saudi Cement Co. Ltd. YACCO
11	Saudi Cement Co. SACCO
12	The Qassim Cement Co. QACCO
13	Saudi Electrics - SECO
14	Zamil Industrial Investment ZIIC
15	Yanbu National Petrochemicals Co. YANSAB
16	Saudi Kayan Petrochemical Co. KAYAN
17	Saudi Pharmaceutical Indus. & Medical Appliances Corp SPIMACO
18	Nama Chemicals Co. NAMA
19	National Metal Manufacturing & Casting Co. NMMCC
20	United Wire Factories Company ASLAK
21	United Projects Group UPAC
22	Aldrees Petroleum & Transport Services Co.
23	Saudi Arabian Fertilizers Co. SAFCO
24	Sahara Petrochemical Co. SPCO
25	Astra Industries AIG
26	National Industrialization Company (TASNEE)
United Arab Emirates	
27	Dana Gas Co. DANA
28	Abu Dhabi National Energy Co. TAQA
29	Fujairah Cement Industries FCI
30	Gulf Pharmaceutical Industries JULPHAR

31	Arkan Building Materials Co. ARKAN.ADSM
32	Fujairah Building Industries FBICO
33	Ras Al Khaimah Ceramics Co. RAKCEC
Kuwait	
34	Boubyan Petrochemicals Co. BPCC
35	Alkout Industrial Projects Co. ALKOUT
36	Qurain Petrochemical Industries Co. ALQURAIN
37	Heavy Engineering Ind. & Shipbuilding Co. SHIP
38	Aerated Concrete Industries Co. ACICO
39	The Public Warehousing Co. AGLTY
40	Kuwait & Gulf Link Transport Co. KGL
41	Combined Group Contracting Co. CGC
42	Independent Petroleum Group IPG
43	National Petroleum Services Co. NAPESCO
44	THE ENERGY HOUSE CO ENERGYH
45	National Industries Co. NICBM
46	Shuaiba Industrial Co. PAPER
47	Gulf Glass Manufacturing Co. GGMC
48	Gulf Cable & Electrical Ind. Co. CABLE
49	Gulf Petroleum Investment Co. GPI
50	Kuwait Cement Co. KCEM
51	Kuwait Projects Company KIPCO
Oman	
52	Aluminium Bahrain Co. ALBH
53	Delmon Poultry Co. POLTRY
54	Al Hassan Engineering Co. HECI
55	Al Jazeera Steel Products Co. ATMI
56	Oman Cables Industry Co. OCAI
57	Oman Flour Mills Co. OFMI
58	Raysut Cement Co. RCCI
59	Salalah Mills SFMI
60	Omani Packaging Co. OPCI
61	Oman Cement Co. OCOI
62	National Gas Co. NGCI
63	Oman oil marketing company co.
Qatar	
64	Qatar Industrial Manufacturing QIMD
65	Qatar National Cement Co. QNCD
66	Industries Qatar Co. IQCD
67	Qatari Investors Group QIGD
68	Qatar Electricity & Water Co. QEWS

69	Mannai Corporation MCCS
70	Aamal Holding Co. AHCS
71	Gulf International Services Co. GISS

Appendix B: Chemical and Petrochemical Categorization

QCPA, Facts and Figures, 2015 - Chemical and Petrochemical items	
Basic Chemicals	Includes seven major bulk commodity (building block: Ethylene, Propylene, Methanol, Aromatics (Benzene, Toluene and Xylenes)
Intermediate Chemicals	Plastic resins, synthetic rubber, man-made fibers and others
Polymers	Commodity thermoplastics, engineering plastics, man-made fibers, man-made rubber with high degree of flexibility
Fertilizers	Various combinations of nitrogen, phosphorous and potassium
Industrial Gases	nitrogen, argon, carbon dioxides and hydrogen used in steel, chemical production, and electronic
Inorganic Chemicals	Metal and non-metallic minerals and do not contain carbon dioxide
Adhesives	Chemical used to bond two surfaces together and are mostly supplied to automotive, construction, packaging sectors
Catalysts	Includes in oil refining, chemical processing industries
Crop Protection	Products that help control plants form harmful insect, diseases and other related products
Dyes and Pigments	Organic and inorganic chemicals used to impart color into materials
Lubricant Additives	Chemical added to lubricants oils
Paints and Inks	Liquid dispersions and dyes or pigments used to impart text and design (paper production)
Consumer chemicals	Chemical induced in soaps and detergents

Appendix C: Normality Test

One-Sample Kolmogorov-Smirnov Test								
		QLED.10	QTED.10	QLED.15	QTED.15	MC.11	MC.16	EV.11
N		71	71	71	71	69	69	69
Normal Parameters[a,b]	Mean	7.14	4.79	12.10	6.99	3123.54	2529.58	8054.97
	Std. Deviation	9.80	5.22	14.83	6.63	10528.8	7746.81	26143.7
Most Extreme Differences	Absolute	0.23	0.21	0.21	0.17	0.38	0.37	0.38
	Positive	0.20	0.21	0.21	0.17	0.34	0.37	0.38
	Negative	-0.23	-0.18	-0.21	-0.15	-0.38	-0.37	-0.38
Test Statistic		0.23	0.21	0.21	0.17	0.38	0.37	0.38
Asymp. Sig. (2-tailed)		.000[c]	.000[c]	.000[c]	.000[c]	.000[c]	.000[c]	.000[c]
		EV.16	TQ11	TQ16	CoE11	CoE16	WACC11	WACC16
N		69	71	71	71	71	71	70
Normal Parameters[a,b]	Mean	4564.01	1.32	1.42	11.54	9.98	9.05	7.44
	Std. Deviation	12691.98	0.76	2.33	5.05	5.32	4.16	4.54
Most Extreme Differences	Absolute	0.36	0.14	0.36	0.12	0.12	0.14	0.13
	Positive	0.34	0.13	0.36	0.12	0.12	0.14	0.13
	Negative	-0.36	-0.14	-0.32	-0.09	-0.09	-0.08	-0.10
Test Statistic		0.36	0.14	0.36	0.12	0.12	0.14	0.13
Asymp. Sig. (2-tailed)		.000[c]	.003[c]	.000[c]	.015[c]	.020[c]	.002[c]	.006[c]
		CoD11	CoD16	TD.TA11	TD.TA16	AE11	AE16	TA11

N		71	71	69	70	71	71	69
Normal Parameters[a,b]	Mean	2.68	1.42	26.33	26.11	2.22	3.01	4598.96
	Std. Deviation	1.40	0.77	19.87	19.98	1.29	6.06	
Most Extreme Differences	Absolute	0.11	0.12	0.11	0.10	0.20	0.37	0.36
	Positive	0.07	0.12	0.11	0.10	0.20	0.37	0.33
	Negative	-0.11	-0.12	-0.09	-0.10	-0.17	-0.37	-0.36
Test Statistic		0.11	0.12	0.11	0.10	0.20	0.37	0.36
Asymp. Sig. (2-tailed)		.039[c]	.012[c]	.040[c]	.184[c]	.000[c]	.000[c]	.000[c]
		TA16	G.RATE11	G.RATE16	NET.SALES11	NET.SALES16	Multi.Listed10	Multi.Listed15
N		69	62	67	68	69	71	71
Normal Parameters[a,b]	Mean	5902.23	16.53	-1.81	424.66	350.08	0.04	0.04
	Std. Deviation		39.13	23.68			0.20	0.20
Most Extreme Differences	Absolute	0.36	0.12	0.14	0.39	0.38	0.54	0.54
	Positive	0.35	0.12	0.14	0.38	0.34	0.54	0.54
	Negative	-0.36	-0.08	-0.08	-0.39	-0.38	-0.42	-0.42
Test Statistic		0.36	0.12	0.14	0.39	0.38	0.54	0.54
Asymp. Sig. (2-tailed)		.000[c]	.032[c]	.002[c]	.000[c]	.000[c]	.000[c]	.000[c]
		Firm.Age10	Firm.Age15	Audit. Type10	Audit. Type15	ROA11	ROA16	ROE11
N		71	71	71	71	71	71	71
Normal Parameters[a,b]	Mean	23.49	28.49	0.62	0.68	6.97	5.47	12.45
	Std. Deviation	14.25	14.25	0.49	0.47	7.39	7.50	11.31
Most Extreme	Absolute	0.09	0.09	0.40	0.43	0.14	0.10	0.11

Difference	Positive	0.08	0.08	0.28	0.25	0.11	0.10	0.11
	Negative	-0.09	-0.09	-0.40	-0.43	-0.14	-0.09	-0.10
Test Statistic		0.09	0.09	0.40	0.43	0.14	0.10	0.11
Asymp. Sig. (2-tailed)		.200[c,d]	.200[c,d]	.000[c]	.000[c]	.002[c]	.182[c]	.042[c]
		a. Test distribution is Normal. b. Calculated from data. c. Lilliefors Significance Correction. d. This is a lower bound of the true significance.						

Appendix D: Correlation (2010)

Correlations												
	QLED.10		QTED.10		Market Capitalization. 11		Enterprise Value.11		Tobin's Q11		CoE 11	
	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.
QLED.10	1		.989**	0.000	.408**	0.001	.431**	0.000	0.134	0.267	.301*	0.011
QTED.10	.989**	0.000	1		.431**	0.000	.451**	0.000	0.141	0.242	.318**	0.007
MC.11	.408**	0.001	.431**	0.000	1		.884**	0.000	.383**	0.001	.534**	0.000
EV.11	.431**	0.000	.451**	0.000	.884**	0.000	1		.293*	0.015	.584**	0.000
TQ11	0.134	0.267	0.141	0.242	.383**	0.001	.293*	0.015	1		0.074	0.540
E.C11	.301*	0.011	.318**	0.007	.534**	0.000	.584**	0.000	0.074	0.540	1	
D.C11	0.146	0.225	0.161	0.180	.437**	0.000	.554**	0.000	0.108	0.368	.391**	0.001
WACC11	0.146	0.224	0.169	0.158	.392**	0.001	.360**	0.002	.254*	0.033	.805**	0.000
TD.TA11	0.220	0.070	0.222	0.067	.304*	0.012	.480**	0.000	-0.107	0.382	.293*	0.015
AE11	.242*	0.042	.253*	0.034	0.184	0.129	.339**	0.004	-0.038	0.752	0.063	0.602
TA11	.412**	0.000	.429**	0.000	.891**	0.000	.875**	0.000	0.097	0.426	.577**	0.000
G.RATE11	0.172	0.182	0.177	0.168	0.094	0.476	0.151	0.249	-0.050	0.701	0.178	0.167
NET.SALES 11	.338**	0.005	.356**	0.003	.575**	0.000	.602**	0.000	0.176	0.152	.274*	0.024
Multi.Listed10	0.130	0.280	0.102	0.397	-0.053	0.667	-0.010	0.935	-.262*	0.027	0.048	0.694

Firm.Age10	-0.004	0.974	-0.015	0.903	-0.106	0.387	-0.149	0.223	.336**	0.004	-0.192	0.109
Audit.Type10	.415**	0.000	.431**	0.000	.385**	0.001	.348**	0.003	0.050	0.676	0.213	0.074
ROA11	0.015	0.901	0.003	0.978	0.116	0.343	-0.024	0.843	.559**	0.000	-0.041	0.735
ROE11	0.130	0.281	0.124	0.303	0.225	0.063	0.114	0.351	.596**	0.000	0.007	0.951
	CoD 11		WACC 11		Total Deb.TA11		AE11		TA11		G.RATE11	
	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.
QLED.10	0.146	0.225	0.146	0.224	0.220	0.070	.242*	0.042	.412**	0.000	0.172	0.182
QTED.10	0.161	0.180	0.169	0.158	0.222	0.067	.253*	0.034	.429**	0.000	0.177	0.168
MC.11	.437**	0.000	.392**	0.001	.304*	0.012	0.184	0.129	.891**	0.000	0.094	0.476
EV.11	.554**	0.000	.360**	0.002	.480**	0.000	.339**	0.004	.875**	0.000	0.151	0.249
TQ11	0.108	0.368	.254*	0.033	-0.107	0.382	-0.038	0.752	0.097	0.426	-0.050	0.701
E.C11	.391**	0.001	.805**	0.000	.293*	0.015	0.063	0.602	.577**	0.000	0.178	0.167
D.C11	1		0.221	0.063	.613**	0.000	.331**	0.005	.429**	0.000	-0.053	0.681
WACC11	0.221	0.063	1		-0.172	0.157	-.376**	0.001	.258*	0.033	0.090	0.487
TD.TA11	.613**	0.000	-0.172	0.157	1		.800**	0.000	.500**	0.000	0.163	0.209
AE11	.331**	0.005	-.376**	0.001	.800**	0.000	1		.416**	0.000	0.098	0.448
TA11	.429**	0.000	.258*	0.033	.500**	0.000	.416**	0.000	1		0.110	0.402
G.RATE11	-0.053	0.681	0.090	0.487	0.163	0.209	0.098	0.448	0.110	0.402	1	
NET.SALES11	0.094	0.447	0.084	0.495	.352**	0.003	.421**	0.000	.677**	0.000	.291*	0.022
Multi.Listed10	-0.063	0.600	-0.027	0.820	0.014	0.906	0.032	0.793	0.080	0.514	-0.116	0.367

Firm.Age10	-.332**	0.005	-0.012	0.923	-.356**	0.003	-0.182	0.128	-0.211	0.082	-0.189	0.141
Audit.Type10	0.121	0.315	0.055	0.650	0.227	0.061	0.231	0.052	.393**	0.001	-0.097	0.452
ROA11	-.270*	0.023	.265*	0.025	-.500**	0.000	-.445**	0.000	-0.187	0.125	0.114	0.379
ROE11	-0.178	0.138	0.183	0.127	-0.231	0.056	-0.089	0.460	-0.011	0.931	0.186	0.147
	NET.SALES11		Multi.Listed10		Firm.Age10		Audit.Type10		ROA11		ROE11	
	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.
QLED.10	.338**	0.005	0.130	0.280	-0.004	0.974	.415**	0.000	0.015	0.901	0.130	0.281
QTED.10	.356**	0.003	0.102	0.397	-0.015	0.903	.431**	0.000	0.003	0.978	0.124	0.303
MC.11	.575**	0.000	-0.053	0.667	-0.106	0.387	.385**	0.001	0.116	0.343	0.225	0.063
EV.11	.602**	0.000	-0.010	0.935	-0.149	0.223	.348**	0.003	-0.024	0.843	0.114	0.351
TQ11	0.176	0.152	-.262*	0.027	.336**	0.004	0.050	0.676	.559**	0.000	.596**	0.000
E.C11	.274*	0.024	0.048	0.694	-0.192	0.109	0.213	0.074	-0.041	0.735	0.007	0.951
D.C11	0.094	0.447	-0.063	0.600	-.332**	0.005	0.121	0.315	-.270*	0.023	-0.178	0.138
WACC11	0.084	0.495	-0.027	0.820	-0.012	0.923	0.055	0.650	.265*	0.025	0.183	0.127
TD.TA11	.352**	0.003	0.014	0.906	-.356**	0.003	0.227	0.061	-.500**	0.000	-0.231	0.056
AE11	.421**	0.000	0.032	0.793	-0.182	0.128	0.231	0.052	-.445**	0.000	-0.089	0.460
TA11	.677**	0.000	0.080	0.514	-0.211	0.082	.393**	0.001	-0.187	0.125	-0.011	0.931
G.RATE11	.291*	0.022	-0.116	0.367	-0.189	0.141	-0.097	0.452	0.114	0.379	0.186	0.147

NET.SALES11	1		0.132	0.284	0.068	0.583	.297*	0.014	0.038	0.760	0.227	0.062
Multi. Listed10	0.132	0.284	1		0.055	0.646	0.165	0.170	-0.153	0.203	-0.141	0.240
Firm. Age10	0.068	0.583	0.055	0.646	1		-0.148	0.218	.386**	0.001	.351**	0.003
Audit. Type10	.297*	0.014	0.165	0.170	-0.148	0.218	1		-0.052	0.670	0.045	0.706
ROA11	0.038	0.760	-0.153	0.203	.386**	0.001	-0.052	0.670	1		.895**	0.000
ROE11	0.227	0.062	-0.141	0.240	.351**	0.003	0.045	0.706	.895**	0.000	1	
**. Correlation is significant at the 0.01 level (2-tailed).												
*. Correlation is significant at the 0.05 level (2-tailed).												

Appendix E: Correlations (2015)

	QLED.15		QTED.15		MC.16		EV.16		TQ16		E.C16	
	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.
QLED.15	1		.982**	0.000	.509**	0.000	.607**	0.000	0.176	0.142	.354**	0.002
QTED.15	.982**	0.000	1		.503**	0.000	.589**	0.000	0.197	0.099	.329**	0.005
MC.16	.509**	0.000	.503**	0.000	1		.834**	0.000	.456**	0.000	.346**	0.004
EV.16	.607**	0.000	.589**	0.000	.834**	0.000	1		.397**	0.001	.399**	0.001
TQ16	0.176	0.142	0.197	0.099	.456**	0.000	.397**	0.001	1		-0.010	0.934
E.C16	.354**	0.002	.329**	0.005	.346**	0.004	.399**	0.001	-0.010	0.934	1	
D.C16	.294*	0.013	.239*	0.045	.395**	0.001	.418**	0.000	-0.173	0.148	.308**	0.009
WACC16	0.067	0.580	0.056	0.644	.245*	0.044	0.078	0.529	0.203	0.093	.565**	0.000
TD.TA16	.358**	0.002	.344**	0.004	0.198	0.102	.427**	0.000	-0.087	0.474	.249*	0.038
AE16	.301*	0.011	.285*	0.016	0.059	0.630	.333**	0.005	-0.050	0.678	0.079	0.510
TA16	.538**	0.000	.515**	0.000	.856**	0.000	.835**	0.000	0.115	0.345	.409**	0.000
G.RATE16	-0.127	0.306	-0.148	0.233	-0.088	0.484	-0.093	0.457	.280*	0.022	-.288*	0.018
NET.SALES 16	.618**	0.000	.616**	0.000	.735**	0.000	.829**	0.000	0.194	0.110	.309**	0.010
Multi. Listed15	0.021	0.863	0.024	0.840	0.004	0.976	0.034	0.784	-0.172	0.152	-0.032	0.791
Firm. Age15	-0.164	0.171	-0.148	0.217	-0.125	0.306	-0.154	0.207	0.131	0.274	-.349**	0.003
Audit.Type15	.493**	0.000	.480**	0.000	.247*	0.041	.281*	0.019	0.107	0.374	0.165	0.170

ROA16	-0.002	0.984	0.011	0.929	0.198	0.102	0.051	0.676	.663**	0.000	-0.021	0.861
ROE16	-0.024	0.844	-0.016	0.897	0.161	0.190	0.045	0.713	.663**	0.000	-0.078	0.521
	D.C16		WACC16		TD.TA16		AE16		TA16		G.RATE16	
	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.
QLED.15	.294*	0.013	0.067	0.580	.358**	0.002	.301*	0.011	.538**	0.000	-0.127	0.306
QTED.15	.239*	0.045	0.056	0.644	.344**	0.004	.285*	0.016	.515**	0.000	-0.148	0.233
MC.16	.395**	0.001	.245*	0.044	0.198	0.102	0.059	0.630	.856**	0.000	-0.088	0.484
EV.16	.418**	0.000	0.078	0.529	.427**	0.000	.333**	0.005	.835**	0.000	-0.093	0.457
TQ16	-0.173	0.148	0.203	0.093	-0.087	0.474	-0.050	0.678	0.115	0.345	.280*	0.022
E.C16	.308**	0.009	.565**	0.000	.249*	0.038	0.079	0.510	.409**	0.000	-.288*	0.018
D.C16	1		-0.132	0.275	.579**	0.000	.406**	0.000	.561**	0.000	-0.113	0.364
WACC16	-0.132	0.275	1		-.445**	0.000	-.601**	0.000	-0.026	0.832	-0.080	0.522
TD.TA16	.579**	0.000	-.445**	0.000	1		.833**	0.000	.511**	0.000	-0.215	0.081
AE16	.406**	0.000	-.601**	0.000	.833**	0.000	1		.392**	0.001	-0.018	0.883
TA16	.561**	0.000	-0.026	0.832	.511**	0.000	.392**	0.001	1		-0.191	0.124
G.RATE16	-0.113	0.364	-0.080	0.522	-0.215	0.081	-0.018	0.883	-0.191	0.124	1	
NET.SALES 16	.406**	0.001	-0.156	0.204	.546**	0.000	.518**	0.000	.852**	0.000	-0.127	0.306
Multi.Listed 15	0.053	0.658	-0.034	0.781	0.007	0.954	0.033	0.786	0.057	0.640	-0.008	0.946
Firm.Age15	-.436**	0.000	0.008	0.947	-.307**	0.010	-0.142	0.237	-.255*	0.035	0.197	0.110
Audit.Type1 5	0.219	0.067	-0.098	0.421	.241*	0.044	.251*	0.035	.341**	0.004	-0.071	0.569
ROA16	-.350**	0.003	.378**	0.001	-.496**	0.000	-.480**	0.000	-0.136	0.265	.276*	0.024
ROE16	-.336**	0.004	.266*	0.027	-.370**	0.002	-.285*	0.017	-0.154	0.211	.317**	0.009

	NET.SALES16		Multi.Listed15		Firm.Age15		Audit.Type15		ROA16		ROE16	
	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.	R	Sig.
QLED.15	.618**	0.000	0.021	0.863	-0.164	0.171	.493**	0.000	-0.002	0.984	-0.024	0.844
QTED.15	.616**	0.000	0.024	0.840	-0.148	0.217	.480**	0.000	0.011	0.929	-0.016	0.897
MC.16	.735**	0.000	0.004	0.976	-0.125	0.306	.247*	0.041	0.198	0.102	0.161	0.190
EV.16	.829**	0.000	0.034	0.784	-0.154	0.207	.281*	0.019	0.051	0.676	0.045	0.713
TQ16	0.194	0.110	-0.172	0.152	0.131	0.274	0.107	0.374	.663**	0.000	.663**	0.000
E.C16	.309**	0.010	-0.032	0.791	-.349**	0.003	0.165	0.170	-0.021	0.861	-0.078	0.521
D.C16	.406**	0.001	0.053	0.658	-.436**	0.000	0.219	0.067	-.350**	0.003	-.336**	0.004
WACC16	-0.156	0.204	-0.034	0.781	0.008	0.947	-0.098	0.421	.378**	0.001	.266*	0.027
TD.TA16	.546**	0.000	0.007	0.954	-.307**	0.010	.241*	0.044	-.496**	0.000	-.370**	0.002
AE16	.518**	0.000	0.033	0.786	-0.142	0.237	.251*	0.035	-.480**	0.000	-.285*	0.017
TA16	.852**	0.000	0.057	0.640	-.255*	0.035	.341**	0.004	-0.136	0.265	-0.154	0.211
G.RATE16	-0.127	0.306	-0.008	0.946	0.197	0.110	-0.071	0.569	.276*	0.024	.317**	0.009
NET.SALES16	1		0.105	0.389	-0.092	0.453	.378**	0.001	-0.110	0.367	-0.072	0.558
Multi.Listed15	0.105	0.389	1		0.055	0.646	-0.004	0.972	-0.053	0.662	-0.036	0.766
Firm.Age15	-0.092	0.453	0.055	0.646	1		-0.211	0.077	0.195	0.102	0.222	0.064
Audit.Type15	.378**	0.001	-0.004	0.972	-0.211	0.077	1		0.097	0.422	0.116	0.339
ROA16	-0.110	0.367	-0.053	0.662	0.195	0.102	0.097	0.422	1		.912**	0.000
ROE16	-0.072	0.558	-0.036	0.766	0.222	0.064	0.116	0.339	.912**	0.000	1	
**. Correlation is significant at the 0.01 level (2-tailed).												
*. Correlation is significant at the 0.05 level (2-tailed).												

Appendix F: Environmental Disclosure (ED) Index Indicators

Environmental Disclosure (ED) Index Indicators				
I. Environmental Strategic Profile (4)	**II. Environmental Governance System (4)**	**III. Environmental Investments (4)**	**IV. Environmental Performance Indicators (6)**	**V. Environmental credibility (4)**
I.1 Environmental Policy of the Organization	II.1 Special department assigned to environmental issues	III.1 Environment spending	IV.1 Environmental accidents (spills/leakage and other accidents)	V.1 Environmental information in the Annual Report
I.2 Environmental education, training, campaigns and conferences	II.2 Environmental code of ethic and behavior	III.2 R&D for environmental enhancement	IV.2 Co2 or other (or green house) gas emissions	V.2 environmental performance awards
I.3 Compliance with environmental regulations	II.3 Preventive measures/environmental protection	III.3 Financing for hi-tech environmental equipment	IV.3 Land Rehabilitation and Remediation	V.3 Following National Environmental Policies (Vision 2030 for Qatar, Vision 2021 for UAE... etc.)
I.4 Separate environmental/ sustainability report	II.4 Environmental auditing	III.4 Green building	IV.4 Water Effluent	V.4 Reference to certification (ISO Standards, GRI)
			IV.5 fees/penalties related to environmental issues	
			IV.6 Waste products disposal and recycling activities	