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CORPORATE ENVIRONMENTAL DISCLOSURE IN THE ARAB MIDDLE EASTERN AND NORTH AFRICAN REGION: AN INSTITUTIONAL PERSPECTIVE

ALI MEFTAH GERGED

A thesis submitted to the University of Huddersfield in partial fulfilment of the requirements for the degree of Doctor of Philosophy

January 2018

Copyright statement

Dedication

I would love to dedicate this thesis to my dear father (May Allah's mercy be upon him) who so sadly passed away, with all loving memories. He taught me that the best type of knowledge to obtain is that learnt for its sake.

I also would like to dedicate this thesis to my beloved mother (May Allah's blessings be upon her), sisters and brothers, for their love, support, and inspiration. Through our loyalty, we stand together and become stronger.

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Undertaking my PhD is a life-changing experience for me, and it would not have been imaginable to do without the guidance and support that I gained from those people and too many others.

Thesis Related Research Outcomes

Refereed Publications

Gerged, Ali M., Cowton, Christopher J. and Beddewela, Eshani. (2017). Towards sustainable development in the Arab MENA region: a longitudinal analysis of environmental disclosure in corporate annual reports. *Business Strategy and the Environment*. DOI: 10.1002/bse.2021 (In Press).

Refereed Conference Papers

Gerged, A., Beddewela, E., and Cowton, C. (2015). 'Exploring Corporate Environmental Disclosure in the MENA region'. In: *the14th Workshop on Accounting and Finance in Emerging Economies, the British Accounting and Finance Association (BAFA), 29th of Nov*, Nottingham Trent University- England-UK.

Gerged, A., Beddewela, E., and Cowton, C. (2016). 'Corporate Environmental Disclosure in the Arab MENA region: a Neo-institutional theory perspective'. In: *The sixth North American Congress on Social and Environmental Accounting Research (CSEAR), first and 2nd of June*: Illinois State University-US.

Gerged, A., Beddewela, E., and Cowton, C. (2016). 'Reporting Environmental information in Annual Reports: evidence from nine Arab MENA countries'. In: *The 28th Congress of Social and Environmental Accounting Research (CSEAR), 23nd to 25th of Aug,* University of St Andrews, Scotland-UK.

Gerged, A., Beddewela, E., and Cowton, C. (2016). 'Annual reports disclosures of environmental information: the case of the MENA region'. *Ethical Behaviour and Ethical Disclosure Conference, European Business Ethics Network (EBEN), the 8th and 9th of Sep*, University of Palermo, Palermo-Italy.

Gerged, A., Beddewela, E., and Cowton, C. (2017). 'Country-level Governance, Environmental Disclosure, and Firm Value: Evidence from the Gulf Cooperation Council Region'. *The 40the Annual Congress of the European Accounting Association (EAA), from 10-12 May 2017,* Valencia-Spain.

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Abbreviations

ACCA Association of Charted Certified Accountants

ADX Abu Dhabi Securities Exchange

ASE Amman Stock Exchange

ASSC Accounting Standards Steering Committee

Big 4 Type of audit

BUS-CUL Business Culture

CAO Central Auditing Organisation

CC Control of Corruption

CED Corporate Environmental Disclosure

CIA Central Intelligence Agency

CLG Country-level Governance

CSE Casablanca Stock Exchange

DIFX Dubai International Financial Exchange

DOA Debt on Assets

EDI Environmental Disclosure Index

EEAA the Protection of the Environment, the Egyptian Environmental Affairs Agency

EGX Egyptian Exchange

FASB Financial Accounting Standards Board

FP Financial Performance

GAAP Generally Accepted Accounting Principles

GCC Gulf Cooperation Council

GDP Gross Domestic Product

GE Government Effectiveness

GNI Gross National Income

IAS International Accounting Standards

IASC International Accounting Standard Committee

ICAEW Institute of Chartered Accountants in England and Wales

IFRS International Financial Reporting Standards

IMF International Monetary Fund

KSE Kuwait Stock Exchange

MAS Moroccan Accounting Standards

MC Market Capitalisation

MDSRC Muscat Depository and Securities Registration Company

MENA Middle East and North Africa

MIT Ministry of Industry and Trade

MSM Muscat Securities Market

NAC National Accounting Council

NASDAQ National Association of Securities Dealers Automated Quotations

ONA Oman News Agency

QE Qatar Exchange

ROA Return on assets

ROE return on equity

SEC Type of Sector

SOCPA Saudi Organisation for Certified Public Accountants

SPSS Statistical Package for Social Sciences

SUBEDI1 Environmental Policy Sub-index

SUBEDI2 Environmental Pollution Sub-index

SUBEDI3 Environmental Energy Sub-index

SUBEDI4 Environmental Financial Sub-index

SUBEDI5 Environmental Other Sub-index

TA Total Assets

TSE Tunis Stock Exchange

UAE United Arab Emirates

UK United Kingdom

UN United Nations

UNICEF United Nations International Children's Emergency Fund

USA United States of America

V&A voice and accountability

WWI World War 1

WWW World Wide Web

Abstract

Prompted by calls to examine social and environmental disclosure beyond developed countries and, in particular, by studies that have begun to investigate practices in the Middle East and North Africa (MENA) region, this study presents a comprehensive analysis of corporate environmental disclosure (CED) by firms in Arab MENA countries. Using a detailed research instrument consisting of 55 items in five categories, a multi-country content analysis of the annual reports of 180 industrial and service sector companies listed on nine of the region's major stock markets was conducted for a five-year period from 2010 to 2014. Consistent with previous studies that applied balanced panel data, the further statistical analysis was conducted by using Ordinary Least Squares (OLS) technique and supported by carrying out other estimations including a fixed-effects model, lagged-effects model, a weighted disclosure index model, and a two-stage least square (2SLS) model. Theoretically, an institutional framework has been employed to interpret CED practices in the MENA region using the three isomorphic pressures (i.e., mimetic, coercive, and normative).

The calculation of an unweighted disclosure index indicates that, although the level of disclosure might be considered relatively low, it increased significantly over the period 2010 to 2014. There are some differences between countries in any given year, but the growth in disclosure is observed to be a region-wide phenomenon. Analysis of five categories of environmental disclosure and the behaviour of different types of the company not only reveals some interesting patterns but also reinforces the picture of a widespread general increase in disclosure.

Although firm-specific characteristics (i.e., firm size, profitability, leverage, industry, auditor type) are positively and significantly related to CED in the MENA region, the influence of country-level governance (i.e., voice and accountability, government efficiency, and control of corruption) is heterogeneous in that they may have enhanced or reduced CED levels in annual reports across the nine MENA countries. Additionally, CED reflects the different region-specific pressures (i.e., business cultures and business environment). By using institutional theory, the study argues that country-level institutional factors, representative of the social context of a company's operational environment may either encourage or discourage the adoption of CED in the countries across the MENA region.

Since a relatively comprehensive disclosure index was used, it is unlikely that the study was biased against any particular country or type of company and so it provides a sound basis for comparison across the Arab MENA region. The study also provides a systematic picture for policymakers in the region as well as future researchers.

Chapter One: Introduction

1.1 Background and Overview

The academic debate in the broad area of Corporate Environmental Disclosure (CED) practices which started in the 1960s and early 1970s, was initially addressed through Corporate Social Disclosure (CSD) (Gray, Owen, & Adams, 1996), moving to concentrate on CED in the 1990s (Gray, 2006). This focus was mainly due to the phenomenon of "the Green Revolution", global concern for the environment, reflected in the enactment of international and domestic legislation (Lodhia, 2003). Companies were compelled to disclose their environmental performance, based on arguments reiterating its positive impact on the overall performance of enterprises, resulting from reduced costs and higher revenue (Adams, Hill, & Roberts, 1995; Gray, Kouhy, & Lavers, 1995a; Mathews, 1997).

Moreover, the role of the corporation in communities has been receiving heightened public scrutiny reflective of an increased interest in social and environmental issues (Reverte, 2009). Corporate scandals, declining natural resources, and climate change have increased community expectations regarding corporate environmental responsibilities (Money & Schepers, 2007). Arguably, these societal demands have encouraged companies to carry out publicly desired activities in order to establish a kind of congruence between social values and company actions (Aerts & Cormier, 2009), leading to an increase of their CED (Baldini, Maso, Liberatore, Mazzi, & Terzani, 2016; Ioannou & Serafeim, 2012; Kamal & Deegan, 2013).

National governments and regulators concentrate on CED practices in order to balance public and private businesses' interests. Internationally, regulators are increasingly looking at the arrangements of corporate governance to make sure that corporate operations are aligned with comprehensive societal interests (Ioannou & Serafeim, 2012). These efforts have encouraged governments to propagate new regulations and policies on CED practices (Talbot & Boiral, 2015). The demand for CED also results from market investors. For example, Solomon and Solomon (2006) point out that institutional analysts and investors who were previously unconcerned about CED have recently turned their consideration to environmental information, creating pressure on companies for sustainability reporting. If managed successfully, environmental disclosure can assist firms' stakeholders in rationalising their decisions and evaluating how effectively a firm

utilises its resources (Marston & Shrives, 1991; Solomon & Solomon, 2006). As such, CED has come to be recognised as a fundamental need for a company's stakeholders as well (Aldrugi, 2013). Also, receiving external awards for environmental performance has been motivating increased CED quality and reliability, leading to both reputational and economic benefits in the long-term (Cooke & Wallace, 1990; Hassan & Ibrahim, 2012; Sun, Salama, & Hussainey, 2010).

Consequently, these pressures could inspire managers to adopt environmental disclosure policies to meet private and public sector requirements (Kamal & Deegan, 2013). The implementation of these policies, nevertheless, is neither a means of opportunistic economic thinking nor strongly profit-oriented and is widely categorised as legitimacy-seeking behaviour (Schaltegger & Hörisch, 2015). Managers are deemed to be more involved in communicative engagement in public deliberation in order to preserve their organisational legitimacy leading to different CED practices across countries (Palazzo & Scherer, 2006). Altogether, these pressures have driven CED to be one of the most critical demands of the modern business environment (Suttipun & Stanton, 2012).

Considerable research from a wide variety of theoretical and empirical backgrounds determined that environmental disclosure is a significant phenomenon applied by companies (Gray, Javad, Power, & Sinclair, 2001) and is affected by a collection of explanatory variables. Prior CED literature reveals that the largest amount of studies have been conducted in industrialised countries (Baldini et al., 2016). This growing interest in environmental issues by developed communities has contributed to an increase of CED practices resulting in the voluntary issuance of independent environmental reports (Mitchell & Hill, 2009).

The literature, however, indicates that there is not enough attention being paid to CED practices in the Middle East and North Africa (MENA) region (Eljayash, James, & Kong, 2012). The MENA region itself classically consists of the area from Iran in South West Asia to Morocco in North West Africa and down to Sudan in Africa. With a population of 355 million people, it is an economically varied region comprising of both resource-scarce countries, such as Morocco and Egypt and those countries with oil-rich economies (e.g., Saudi Arabia, Qatar and Kuwait) (World Bank, 2015). The economic fortunes of the nations in the MENA region are expected to be considerably affected by two key factors; its economic structural composition which emphasises a vital role for the state and the legacy of economic policies built upon oil (World Bank, 2015).

The vast majority of studies which were undertaken in the context of MENA countries, to date, have been mainly carried out at a single country level (Elsayed & Hoque, 2010; Gana & Dakhlaoui, 2011; Islam & Islam, 2011). Moreover, these studies used information produced from a small number of firms and sectors (Al-Janadi, Rahman, & Omar, 2012; Mohammed Hossain & Hammami, 2009), the results might, thus, be regarded to be of poor evidential value.

Additionally, CED literature in MENA countries lacks the use of theoretical frameworks mainly institutional theory to explain its CED (Akrout & Othman, 2013). Particularly, accounting disclosure practices are substantially associated with institutional pressures determining the interaction between firms and communities (Deegan & Shelly, 2014; Hopwood & Miller, 1994). Those research Studies which have used institutional theory to explore corporate social and environmental disclosure have mainly concentrated on examining firm-level determinants (Branco & Rodrigues, 2008; Ntim, 2016; Reverte, 2009); with only few studies focusing on the country-level determinants of social and environmental disclosures (Baldini et al., 2016). This means that there is a dearth of understanding concerning how institutional pressures affect CED practices at both the firm and country levels. Accordingly, the institutional theory has been employed in this study to provide necessary explanations for the reasons behind companies' adaptation of CED practices within the MENA region.

Thus, this study aims; (1) to explore the levels, trends, and patterns of annual report disclosures of environmental information for 180 listed firms in nine MENA countries during a five-year period from 2010 to 2014 and (2) to investigate the multi-level determinants (firm-level, country-level and region-level determinants) of CED practices in the area employed from an institutional perspective. The current study addresses these aims and thus respond to calls for more in-depth research investigating CED practices amongst MENA firms (Kamla, 2007). The present study is, therefore, significant not only in its scope but also because of its context specificity.

The introductory chapter offers an outline of the arguments that inspired conducting the present research. It begins with reporting the broader background for this study and defining the incentives that led to the pursuit of this study. The essential research questions tackled in the current study are then highlighted. Afterwards, this chapter outlines the methodological assumptions and selections supporting the study and the methods applied. A rationalisation of the pursuit of the

study is delivered by highlighting its contribution to knowledge and its significance. Finally, the organisation and structure of the thesis are described.

1.2 Motivation for the Study

The current research on MENA region is driven by four main motivations. First, and as was briefly explained above, MENA region arguably provides a fascinating study context where the exploration and explanation of corporate environmental disclosure practices could be empirically conducted. Particularly, the corporate context in the region has some shared attributes (e.g., business culture and accounting profession) with the Western corporate environment such as the UK, the US and France who are considered as the main current business partners and previous colonists to MENA countries. Prior literature argued that the characteristics of accounting systems in Europe, such as the Latin accounting system in France, are promoting less disclosure and transparency practices than their Anglo-American counterparts (Saudagaran & Biddle, 1992); therefore, business culture inherited from previous colonialists and primary trading partners could be a fundamental factor explaining the variations in CED practices across the Arab MENA countries (Othman & Zeghal, 2010). As such, this study was motivated to offer a better understanding of CED practices at both country and regional scales of analysis.

The second key motivation for this study on MENA region is that it is home to some of the leading multinational corporations in the world. For instance, Forbes (2016) ranking of the top 2000 corporations in the world by market value suggests that over 80 multinational companies are based in MENA countries such as the UAE, Kuwait, Saudi Arabia, Qatar, Egypt, Jordan and Morocco. Furthermore, on average, MENA companies attracted over $45 billion as Foreign Direct Investments (FDI) in 2015, primarily from pension funds and large US and UK institutional investors (World Bank, 2016). This point means that unlike most developing states, any failures in corporate environmental reporting could have severe implications far beyond the MENA region.

The third main motivation for the current study is that focusing on CED in the MENA region is critical, as many companies operate within polluting sectors (e.g. energy sector and industrial sectors) in this region, whose economic activities have a significant effect on their surrounding environment. Industrial companies which are environmentally sensitive have played a crucial role in MENA economies with substantial contributions to Gross Domestic Product (GDP) (World Fact

Book, 2015). In Saudi Arabia, for instance, the contribution of entire industrial sectors represents 59.7% of the total GDP. Moreover, the region has recorded the highest exposure to tiny air pollutants in the world according to the recent statement compiled by The World Bank (2015). Therefore, the examination of annual report disclosure of environmental information in the Arab MENA region is of significance stemming from the environmental problems that encounter the region, coupled together with the fact that environmentally sensitive sectors achieve major contributions to MENA economies. The findings of this study offer government and national regulatory organisations a strong motivation to establish more effective environmental policies and initiatives that could develop CED practices and the sustainability in the area.

The fourth motivation for this research is that regardless of debatably offering an interesting research context, there is a lack of rigorous empirical study that attempts to explore and explain CED in the Arab MENA region from an institutional perspective at both a country and a regional scales (Jamali, 2008). Notably, extant empirical research to date offers limited comparative data related to CED practices across the region, indicative of a lack of comprehensive regional-level studies (Kamla, 2007). Accordingly, this study provides opportunities to contribute to the extant literature and to learn more about CED practices at a regional level.

Finally, despite increasing concerns that the existence of endogenous statistical problems could confound research results, previous multi-country studies (Eljayash et al., 2012; Kamla, 2007) that comprise MENA countries did not explicitly tackle expected problems that might result from the presence of endogenous associations between CED and different explanatory variables. This criticism is also bringing into doubt the reliability of the findings of those earlier CED studies in the region. As such, the present study addresses the statistical problems that the potential presence of endogeneity could lead to.

1.3 Research Questions

The primary objective of this study is to document the level of annual report disclosures of environmental information for 180 firms in nine MENA countries during a five-year period from 2010 to 2014. It also seeks to empirically examine multi-level determinants of CED in the region employed from an institutional perspective. To achieve the objectives of the study, it aims to answer the following questions:

Q1: What is the extent of corporate environmental disclosure in 180 companies listed on nine Arab MENA emerging markets in the period from 2010 to 2014?

Q2: What are the patterns of total corporate environmental disclosure across MENA countries?

Q3: What is the trend in total corporate environmental disclosure over time in the region?

Q4: What is the extent of the association, if any, between corporate environmental disclosure and firm-specific characteristics (firm size, profitability, leverage, sector type and auditing types)?

Q5: What is the extent of the association, if any, between corporate environmental disclosure and country-level governance in the MENA region?

Q6: What is the extent of the relationship, if any, between corporate environmental disclosure in the MENA region and region-specific pressures?

1.4 Research Scope and Methodology

This study adopts a functionalist research paradigm which follows an ontological realism and epistemological positivism and embraces at least a partially determinist view concerning human nature, and nomothetic approach in relation to the methodology (Burrell & Morgan, 1979). Thus, the current study employs a quantitative approach which applies analysis techniques, protocols, and procedures which have been obtained from the natural sciences and emphasises testing hypotheses. Quantitative techniques have been implemented in the current study to achieve various advantages related to data generalizability, reliability and objectivity (Hussey & Hussey, 1997). Therefore, the study seeks a quantitatively measured exploration and explanation of the perceived reality of CED in the Arab MENA region. This study consists of two primary pieces of work. An unweighted content analysis technique was employed to determine the levels of, and patterns and trends in, CED practices provided by 180 listed firms on nine Arab MENA stock markets during the period from 2010 to 2014. In line with prior studies that implemented balanced panel data (e.g., Elghuweel, 2015; Ntim, 2009; Ntim & Soobaroyen, 2013) the empirical examination was conducted by using Ordinary Least Squares (OLS) technique in order to examine the relationship between multilevel factors employed from an institutional perspective and CED in the region. OLS is an efficient estimation method under three conditions (Wagner, 2005). Firstly, the unit of errors is assumed to be independently and identically distributed; secondly, the errors are supposed to be

homoscedastic, and thirdly the propositions of the traditional linear model are achieved (Johnston & DiNardo, 1972). As such, the empirical investigation starts with estimating an OLS model in the following form:

$$EDI_{it} = \alpha_0 + \beta_1\ SIZE_{it} + \beta_2\ LEV_{it} +\ \beta_3\ PROF_{it}\ +\ \beta_4\ SEC_{it} +\ \beta_5\ BIg4_{it}$$
$$+ \beta_6\ V\&A_{it} + \beta_7\ GE_{it} +\ \ \beta_8\ CC_{it} + \beta_9\ BC_{it} + \beta_{10}\ GCC_{it}\ + \sum_{i=1}^{n} CONTROLS_{it}$$
$$+\ \varepsilon_{it}$$

Where EDI refers to the Environmental Disclosure Index that has been adopted and developed based on the relevant literature. SIZE, LEV, PROF, SEC, BIG 4, V&A, GE, CC, BC and GCC are defined as firm size, leverage, profitability, sector type, type of audit, voice and accountability, government effectiveness, control of corruption, business culture, and Gulf Co-Operation Council which is reflective of the business environment; and CONTROLS refers to the two control variables, namely Gross Domestic Product (GDP) and year dummies.

1.5 Research Contribution to Knowledge

International concern regarding the environment and the resulting academic attention in studying companies' environmental disclosure have given substantial motivation for conducting the current study. CED literature documents that a significant number of studies has been carried out in developed countries, whereas relatively little research has been conducted into CED in developing countries (O'Donovan, 2002). The literature, also, indicates that there is lack of attention being paid to environmental disclosure in the Arab MENA region (Eljayash et al., 2012). The findings of this study contribute to the extant literature in three different but inter-related aspects.

First, using data collected directly from firms' annual reports, the study offers a comprehensive documentary of CED levels, trends, and patterns in the Arab MENA companies. Also, existing empirical research to date offers limited comparative data related to the environmental performance and disclosure of firms across the area, indicative of a lack of comprehensive regional-level studies (Islam & Deegan, 2008; Kamla, 2007). Consequently, the current study empirically contributes to the literature by providing new evidence of CED at both country and regional basis which might be used to facilitate comparisons with those of its international counterparts to learn more about CED internationally.

Second, the present study followed previous CED literature and adopted a comprehensive disclosure index to measure CED practices in the MENA region (Gray, Kouhy, & Lavers, 1995b; Hackston & Milne, 1996; Wiseman, 1982). However, the appropriateness of Western CED techniques to assess CED within the different socio-cultural contexts of developing countries has been criticized (e.g. Gray & Kouhy, 1993; Bebbington et al., 1994; Baydoun & Willett, 1995; Belal, 2001; O'Donovan, 2002). Therefore, although the content analysis instrument used by Wiseman (1982), Gray et al. (1995) and Hackston & Milne (1996) was used as a basis for this study, it was expanded to ensure its relevance to the sample companies in two ways. First, studies of CED in developing countries, including MENA countries, were examined to identify additional disclosure items (e.g., Hossain et al., 2006; Islam & Deegan, 2010; Akrout & Othman, 2013; Ullah et al., 2014). Second, a pilot study of Saudi Arabian companies was conducted in 2014; this resulted in the inclusion of items, such as the influence of Islamic principles, within the disclosure index. This process resulted in a total of 55 environmental disclosure items being added to the checklist or research instrument, which is considerably more detailed and therefore more comprehensive than previous studies in the Arab MENA region. As such, the study contributes methodologically by developing a comprehensive disclosure index in order to measure CED specifically incorporating innate CED elements associative of the Arab MENA region.

Third, this study also reaffirms the importance of understanding those factors which influence and motivate firms to disclose (or not) environmental information within their annual reports in the region. Thus, it contributes to extant literature by bringing empirical and theoretical insights from within the Arab MENA region, where little is known about it (Kamla, 2007), but notably it extends these insights towards empirical evidence on the relationship between CED and different variables, selected at the firm-level, country-level and regional-level, and employed from an institutional perspective. These variables represent five firm-specific characteristics (firm size, profitability, leverage, sector type, and auditor type); three country-level governance indicators (voice and accountability, control of corruption and government effectiveness); and two region-specific pressures (business culture, and sub-region or business environment). Furthermore, fewer studies have employed the institutional perspective to explain CED practices in MENA countries, where the use of any theoretical underpinning is also hardly abundant. Also, the literature lacks empirical and theoretical pieces of evidence that investigating the influences of region-specific pressures such as business culture and sub-region (business environment) on environmental reporting

(Othman & Zeghal, 2010). Besides, to the best of the researcher's knowledge, the relationship between CED and country-level governance has rarely been examined in the existing literature, more specifically in the context of MENA countries. The study, as such, theoretically contributes to this dearth of literature by providing detailed empirical evidence of multi-level determinants of CED practices in the MENA region from an institutional perspective.

As has been mentioned earlier, the investigation of CED practices in the Arab MENA region is of major significance stemming from the environmental challenges that face the region, coupled together with the fact that environmentally sensitive sectors achieve notable contributions to MENA economies (World Bank, 2015, 2016). Given the paucity of research into CED within the region, the findings of the current study contribute to governments, companies, and policymakers by reiterating the crucial need for a more concerted effort to integrate economic, environmental and political policies to ensure sustainability within the region.

Finally, and contrary to earlier studies in the region, problems that the possible existence of endogeneity could lead to, were comprehensively tackled in the current study. These solutions consist of estimating models based on a lagged-effects, an alternative (weighted) disclosure index, a firm-level fixed-effects, and a two-stage least square (Larcker & Rusticus, 2010). These additional tests have largely enhanced the reliability and the validity of the results of this study.

Table 1.1 below provides more clarity on the different methodological, empirical and theoretical contributions of the present study to the literature, and in particular how these contributions align with the gaps in the existing literature as follows.

Table 9.1: A summary of the main contributions of the current study to the existing literature.

Existing Gap in Literature	Contribution of this study	Remaining Gap
Differences can perhaps be discerned between different countries – though, as Table 3.4 (p75) shows since most studies are of a single country and use only a limited and varying range of environmental disclosure items and categories, such differences are to a large extent a matter of conjecture. In conclusion, there are signs of interest by researchers in CED in the Arab MENA region, but as yet the coverage is patchy. Most studies are focused on a single country, with the environmental disclosure items checked for often relatively few in number and usually subsumed within a broader CSD study. The only multi-country study of CED (El-Jayash et al., 2012) focused exclusively on the oil and gas sector and used just sixteen environmental disclosure items. While some CSD studies examined environmental disclosure items more than this (e.g. Naser & Hassan (2013) used 25 in their study of UAE), the overall average of the studies listed in Table 3.4 (p75) is just 12.7 items, suggesting that coverage of environmental issues has tended to be limited to date.	**Methodological Contribution**: The ability to compare different countries meaningfully and convincingly is dependent upon a comprehensive and consistent checklist of disclosure items, which is a key contribution of the current study. Therefore, although the content analysis instrument used by Wiseman (1982), Gray et al. (1995) and Hackston & Milne (1996) was used as a basis for this study, it was adapted and expanded to ensure its relevance to the sampled companies in two ways. First, studies of CED in developing countries, including MENA countries, were examined to identify additional disclosure items (e.g., Hossain et al., 2006; Islam & Deegan, 2010; Akrout & Othman, 2013; Ullah et al., 2014). Second, a pilot study of Saudi Arabian companies was conducted in 2014; this resulted in the inclusion of items, such as the influence of Islamic principles, within the disclosure index. This process resulted in a total of 55 environmental disclosure items in the checklist or research instrument, which is considerably more detailed and therefore more comprehensive than previous studies in the Arab MENA region (see the column 7 of Table 3.4, p75). In this study, an effort has been made to provide a considerable margin with the most thorough coverage of corporate environmental disclosure (CED) in the annual reports of listed companies in the Arab MENA region.	A technique for the analysis of the quality of CED in corporate annual reports in the MENA region could be considered in order to close the gap in which related to CED measurement within the region. Particularly, CED quality might be analysed on the basis of four dimensions, namely, direction, type, verifiability and outlook as defined by the International Accounting Standards Board (IASB). Accordingly, a weighted environmental disclosure index is thought to be appropriate to distinguish between the variable degrees of CED quality in corporate annual reports of listed firms in the MENA region.
A review of the existing CED-related studies was conducted in this study to identify the empirical gap in CED literature regarding Arab MENA countries. These studies were either confined to single-country study (Al-Drugi & Abdo, 2012) or used a few firms, one type of sectors and less than the five-year period (Eljayash et al., 2012) or focused on one point of time (Akrout & Othman, 2013). Crucially, empirical research carried out up to date delivers little information about comparative data related to the environmental disclosure of firms in the MENA region, indicating the lack of comprehensive regional-level studies (Kamla, 2007).	**Empirical contribution (1):** The present study investigated a wide range of countries (9), a good sample of companies (180), a substantial period of years (5), and a large number of environmental disclosure items (55) contained in a research instrument designed for the content analysis – resulting in a total of 445,500 data points to feed into the calculation of the calculation of the overall environmental disclosure index as well as five sub-indices. As highlighted by Table 3.4, p75, the study also adds considerably to coverage of individual countries – not just Oman, which is analysed for the first time, but also several other countries, which either have not been investigated recently (Qatar, Tunisia) or have only been subject to one single-year study (Kuwait, UAE). Moreover, and most importantly, most of the previous studies did not accurately analyse CED (corporate environmental disclosure), but CSD (corporate social disclosure) and so examined only a small number of environmental items; and where they did focus on CED, the number of items was still much smaller than in the current study. In addition to the benchmarking contribution made by the analysis, the identification of significant growth in disclosure across the region is probably the key finding of the study, a finding that seems to apply whatever country, disclosure category (but with some variation) or type of company is	The environmental data has been collected only from companies' annual reports. It may have been verified together with other sources of data, such as face-to-face interviews and questionnaire survey. However, and as has been discussed in chapter four (methodology chapter), contrary to other mediums (e.g., website and standalone reports), the firms Act and the listing rules in the nine MENA stock exchanges command listed companies to prepare annual reports. Also, the

	considered. This would seem to be of some encouragement in terms of environmental challenges and sustainable development in the region. In presenting the first systematic, detailed analysis of CED in the Arab MENA region, the current study not only contributes an insightful picture of current practice and recent trends but also lays a solid foundation for future researchers interested in the topic.	sample size of 180 listed firms in this study could be deemed as a small size compared to those studies that have been carried out in developed countries. In this regard, the dependent variable (EDI) and firm-specific characteristics data (TA, ROA, and DOA) has been manually collected, which needed a long time and hence, limited the researcher's concentration to a sample of 180 MENA firms during a five-year time. However, a sample of 180 firms is substantially larger than the samples of previous MENA studies (see Table 3.4 p75).
As yet, only a small number of studies has theoretically and empirically examined how country-level governance (CLG) can explain the variability in CED practices across countries (Baldini et al., 2016). Thus, while it can be argued that voluntary adoption of CED practices has steadily grown across GCC countries in recent years (Akrout & Othman, 2013; Gerged, Cowton & Beddewela, 2017), it as yet unclear as to 'what' country-level factors have influenced it.	**Empirical contribution (2):** The current study distinctively contributes to the existing literature by investigating the critical policy questions of why and how country-level governance and region-specific pressures might influence CED practices in the MENA region from an institutional perspective. Given that, this study is built on previous literature and argues that the cross-sectional variability in CED practices might be attributed to differences in country-level indicators (Ioannou & Serafeim, 2012). The concentration on country-level governance is based on previous research on the varieties of capitalism theory (Hall & Soskice, 2001), which presented that country-level institutional indicators could result in relative institutional benefits for businesses across countries (Jackson & Apostolakou, 2010). This study argues that a country's institutional regulations and norms (proxied by CLG) can provide a restraining force upon companies that work within its governing environment (DiMaggio and Powell, 1983). Particularly, a country's standard setters and accounting regulators can persuade, and potentially mandate, the disclosure of corporate environmental information in annual reports which could result in less variability or sustained similarity in CED practices (Abdallah, Hassan, & McClelland, 2015). Corporate disclosure in effect *is* affected by the imposition of institutionalised norms; although companies actively negotiate the establishment of these standards in order to obtain their legitimacy (Campbell, 2007).	Other country-level characteristics could be employed to investigate variabilities in cross-country social and environmental disclosures such as idiosyncratic institutional, political, and cultural elements.
As opposed to previous CED-related studies that carried out in the context of MENA region, the possible endogeneity problems were comprehensively addressed in the present study.	Several estimations have been applied in the current study to address any concerns regarding the existence of endogeneity problems such as a lagged-effect model, an alternative disclosure index model, a firm-level fixed-effects model, a Durbin Wu Hausman Model, and a two-stage least squares (2SLS) model. These analyses suggest that the main results of this study are reliable and robust.	Other types of models could be estimated to tackle the problem of endogeneity such as Generalized Method of Moment (GMM).

Few studies have used institutional theory to investigate country-level determinants of environmental disclosure practices (Jackson & Apostolakou, 2010; Oliver, 1991). Furthermore, fewer studies have employed multilevel variables (company, country, and/or region) from an institutional perspective to explain CED practices (Baldini et al., 2016). Besides, the use of theoretical foundation, in general, is hardly abundant in those studies that have been conducted in MENA countries (Kamla, 2007). Expressly, there is a dearth of using institutional theory to interpret social and environmental disclosures in the MENA region at both single-country and cross-country studies.	**Theoretical Contribution:** On the basis of the restrictions in the present CSR research, future research is contended to unpack the basic theoretical foundations to interpret corporate disclosure from a broader societal aspect (Lee, 2008). The analysis of country-level factors is considered as a relatively new topic that needs to be investigated to go into detail about variables explaining CED (Sotorrío & Sánchez, 2008). This study, therefore, employs an institutional framework to interpret the development of CED practices from both the organisational field (micro) and societal (macro) levels. The study also addresses calls by Husted and Allen (2006) that stated that more studies are required to employ the mimetic, coercive and normative isomorphism in interpreting the adoption of CED practices in a given context. In addition, the study contributes to institutional theory, by not only investigating a single-country as in other studies (e.g., Amran & Haniffa, 2011; Bansal, 2005). In this sense, Dhaliwal et al. (2011) suggest that due to the varied institutional and national legal settings, international research in CED would be greatly beneficial. Additionally, the study contributes towards extending the understanding of isomorphism and its influences upon CED across the countries in the MENA region. For example, Campbell (2007) suggest that companies are likely to be environmentally responsible if there are NGOs in their institutional environment that can observe and change corporate environmental performance and disclosure, reflective of a normative isomorphism. The findings of this study nevertheless suggest that civil society organisations and NGOs in the sampled MENA countries seem to have less influence on CED practices. More specifically, the survival of companies in the MENA region could be associated with regulative pressures rather than social acceptance. This means that CED in the MENA region appeared to be better interpreted by coercive isomorphism rather than normative isomorphism. Likewise, the results propose that firms disclose their environmental information, not only because of the efficiency of government in managing the relations and cooperation between the public and private sectors but as a consequence of government control over companies and their resources which could be interpreted by employing a coercive pressure. Such coercive forces and other mimetic and normative pressures were comprehensively used to explain the results of this research.	The employed institutional framework could be further developed to provide more critical insights about corporate disclosure practices in the Arab MENA region. In other words, more critical arguments could be developed to complement the understanding about the expected effects of institutional environment (e.g., regulative pressures, voice and accountability, non-governmental pressures) upon corporate environmental disclosure in the context of the Arab MENA region.

1.6 Structure of the Thesis

This section describes the organisation and structure of the current study while delivering an outline of its contents. The thesis is organised into nine chapters as follows.

Chapter one is the introductory chapter that has shown the background for the research along with the main motivations behind undertaking the present study. This chapter then addressed the primary research questions followed by an overview of the methodological choices and assumptions underpinning this research further to the methods applied to conduct the study. A rationalisation for the study pursuit is delivered by emphasising its significance and contributions to knowledge and practice.

Chapter two provides an overview of particular Arab MENA emerging markets. Mainly, this chapter seeks to achieve three key objectives. First, it defines the MENA region at both country and regional levels to end up with a justification for selecting only nine Arab MENA emerging markets out of 16 countries to study. Second, it describes the selected MENA countries in the current study from geographical, political and economic perspectives, highlighting their financial reporting environments and stock exchange requirements. Finally, it discusses MENA's sub-regions which could have different influences on companies' CED practices.

Chapter three offers a review of the relevant literature. It commences with a background of annual reports disclosure of environmental information including definitions, formats and processes. The chapter then discusses the perspective of institutional theory by looking at the three types of isomorphic pressures (i.e., mimetic, coercive and normative) in relation to CED practices. This chapter then explores the previous literature conducted in different contexts of developed, less developed, developing and finally the Arab MENA countries. Throughout this chapter, the emerging empirical and theoretical gaps are highlighted pointing to the key contributions of this study. Additionally, the chapter concludes with an argument highlighting potential reasons for the failure of previous studies to establish conclusive and consistent findings and determining any gaps in the current literature of CED practices. Finally, this chapter discusses how the hypotheses of the current study could be developed according to previous empirical research and framed based on an institutional framework.

Chapter four depicts the research methodology employed to achieve the objectives of this study. It commences with discussing the research methodological standpoint or the research philosophy and how this validates the selection of methods to be applied in undertaking the study. Then, the research design for the required analysis is established. The quantitative approach, employing unweighted content analysis of a sample of companies' annual reports in the region, is conducted to explore the entire disclosure of environmental information during a five-year period span between 2010 and 2014. In doing so, this chapter distinguishes between various areas of activity or categories to which CED relates as well as between the diverse contents of environmental information. This chapter also investigates the association between the total disclosure of environmental information and multi-level variables (firm-specific characteristics, country-level determinants, and region-specific pressures) employed from an institutional perspective by using a Pooled Ordinary Least Squares (OLS) regression. This chapter then concludes with a series of additional tests to check the robustness or sensitivity of the main results.

Chapter five constitutes the first part of the empirical work aimed quantitatively to assess the levels, patterns and trends in CED practices in a selected sample of companies across nine Arab MENA countries. This chapter offers detailed data on the total environmental disclosure using different descriptive statistics at both state and regional scales. In this sense, a summary of descriptive statistics regarding the total CED based on the full sample is documented. This chapter then explains the variability in CED practices based on firm size and industry type to ascertain whether these categories could clarify the observed variability in CED levels across the sampled countries within the area.

Chapter six discusses the assumptions of Ordinary Least Squares (OLS) regression. The chapter explains how outliers in the continuous dependent and independent variables have been dealt with. Then, it displays comprehensive descriptive statistics of the dependent variable (EDI) and the other continuous independent variables (TA, ROA, DOA, V&A, GE, and CC). Finally, the chapter concludes with examining OLS assumptions relating to normality, linearity, auto-correlation, homoscedasticity and multicollinearity.

Chapter seven constitutes the second stage of the empirical work aimed at quantitatively investigating the association between CED in the region and specific variables employed from an institutional perspective. This chapter achieves three central objectives. First, it discusses the

validity and reliability of the used methods and relationships. Second, it reports the empirical results of this study. It examines whether better environmentally disclosed firms are associated with multi-level variables, employed from an institutional perspective. In this sense, the results of estimating OLS regression based on a model of EDI are described and debated. After that, the results of estimating OLS on the basis of the five EDI sub-indices are reported. Finally, this chapter explains the results built on a series of additional tests. Mainly, this section subjects the empirical results to an extensive set of robustness tests, including conducting a lagged EDI model, an alternative index model, a firm-level fixed-effects model and finally a two-stage least square (2SLS) model. The chapter reports a range of statistical tests, containing descriptive statistics (univariate analysis), parametric and non-parametric correlation matrices (bivariate analysis) and regression analysis (multivariate analysis) carried out in order to examine multi-level determinants of CED practices while controlling for GDP and year dummies. It explains the results of the study within an institutional framework that attempts to employ the three isomorphic pressures in interpreting CED practices in the MENA region.

Chapter eight presents and discusses the findings of the current study. It first explores and debates the different levels, trends and patterns of CED practices in the Arab MENA companies at both country and regional scales. It then reports comprehensive explanations of the variables that affect CED practices in the region from an institutional perspective.

Chapter nine presents the conclusion of this thesis. This chapter brings together a summary of the principal findings of the study highlighting some potential implications on how to develop corporate environmental disclosure practices in the region and where possible, makes suitable recommendations. This chapter also summarises the key contributions of the current study as well as acknowledging its main limitations. Finally, it suggests avenues for future research and improvements. The structure of this thesis could be simply clarified and concluded in figure 1.1 below.

The next chapter discusses the contextual background of the present study (i.e., the Arab MENA emerging markets).

Table 1.1: Thesis Structure

Corporate Environmental Disclosure in the Arab MENA region: An institutional Perspective

↓

Theoretical Aspects

Chapter One: Introduction and Outline of the thesis	**Chapter Two:** The background of the Arab MENA region	**Chapter Tree:** Literature Review and hypotheses development

↓

Chapter Four: Research Methodology and Methods

↓

Empirical Sections

Chapter Five: Descriptive Statistics and results	**Chapter Six:** OLS Assumptions	**Chapter Seven:** Inferential Statistics, results and Robustness	**Chapter Eight:** Discussion

↓

Chapter Nine: Conclusions

Chapter Two: The Context of the Arab MENA Countries

2.1 Introduction

This chapter provides an overview of particular Arab MENA countries. Mainly, it seeks to achieve three key objectives. First, the chapter defines MENA region at both country and regional levels to end up with a justification for selecting the nine Arab MENA states to study out of 16 countries. Second, it describes the selected MENA countries from political and economic perspectives, highlighting their financial reporting environments and stock exchanges. Finally, it discusses MENA's sub-regions which could have different influences on companies CED practices. The chapter is organised as follows. Section 2.1 introduces the chapter. Section 2.2 defines and describes the selected MENA countries and identifies the reasons for selecting the sampled countries and how their specific characteristics could be employed in explaining the empirical results. Section 2.3 discusses the Arab MENA sub-regions. Finally, Section 2.4 concludes this chapter.

2.2 The Definitions of MENA Countries

As has been discussed in Chapter one, the term "MENA region" denotes the Middle Eastern and North African countries. The MENA region itself classically consists of the area from Iran in South West Asia to Morocco in North West Africa and down to Sudan in Africa. With a population of 355 million people, it is an economically diverse region comprising of both resource-scarce countries, such as Morocco and Egypt and those countries with oil-rich economies (i.e. Saudi Arabia, Qatar and Kuwait) (World Bank, 2015). The economic fortunes of the countries in the MENA region are expected to be considerably affected by two key factors; its economic structural composition which emphasises a fundamental role for the state and the legacy of economic policies built upon oil (World Bank, 2015).

Some have argued that there is no precise definition of the MENA region. The term was employed by the British in the 19th century to indicate the Persian Gulf Region (Roudi-Fahimi & Kent, 2007). By the middle of the 20th century, the Middle East as a region involved not only the Arab countries of Western Asia, Israel, and Iran, but also Egypt, Turkey, and Cyprus. The boundaries of the region are occasionally extended eastward to include Afghanistan and Morocco westward (Roudi-Fahimi & Kent, 2007).

Table 2.1 presents summaries of several classifications of MENA countries conducted by different international organisations. This table suggests that there is largely agreed on a number of MENA states. For example, the United Nations categorises the MENA region into 20 nations, although the classification of International Monetary Fund (IMF) includes 24 countries within the MENA area.

Table22.1: MENA Countries Classifications

The World Bank	UNICEF	The United Nations	The IMF	League of Arab States*
-	-	-	Afghanistan	-
Algeria	Algeria	Algeria	Algeria	**Algeria**
Bahrain	Bahrain	Bahrain	Bahrain	**Bahrain****
Djibouti	Djibouti	-	Djibouti	Djibouti
Egypt	Egypt	Egypt	Egypt	*Egypt*
Iran	Iran	-	Iran	-
Iraq	Iraq	Iraq	Iraq	**Iraq**
Israel	-	Israel	-	-
Jordan	Jordan	Jordan	Jordan	*Jordan*
Kuwait	Kuwait	Kuwait	Kuwait	*Kuwait***
Lebanon	Lebanon	Lebanon	Lebanon	**Lebanon**
Libya	Libya	Libya	Libya	**Libya**
Malta	-	-	-	-
-	-	Mauritania	Mauritania	Mauritania
Morocco	Morocco	Morocco	Morocco	*Morocco*
Oman	Oman	Oman	Oman	*Oman***
-	-	-	Pakistan	-
Palestine	Palestine	Palestine	Palestine	**Palestine**
Qatar	Qatar	Qatar	Qatar	*Qatar***
Saudi	Saudi	Saudi	Saudi	*Saudi***
-	-	-	Somalia	Somalia
-	Sudan	-	Sudan	Sudan
Syria	Syria	Syria	Syria	**Syria**
Tunisia	Tunisia	Tunisia	Tunisia	*Tunisia*
UAE	UAE	UAE	UAE	*UAE***
-	-	Western Sahara	-	Western Sahara
Yemen	Yemen	Yemen	Yemen	**Yemen**
21 countries	**20 countries**	**20 countries**	**24 countries**	**22 countries**

Note: the Table demonstrates MENA countries as various establishments have classified them. *This column pinpoints Arab MENA countries where bolded countries have a stock exchange. **These countries denote the Gulf Cooperation Council (GCC) countries. The **bolded** in *italic* countries are the sample of the study.

Furthermore, the World Bank has classified 21 countries in its categorisation for MENA region. The United Nations International Children's Emergency Fund (UNICEF) has reported a similar classification to The World Bank apart from not including Israel and Malta. However, the UNICEF list includes Sudan which was not incorporated in World Bank ranking.

Besides, consistent with the classification of the League of Arab States, there are 22 Arab nations amongst the MENA region; for this reason, the MENA countries may be classified into two main categories namely: the Arab MENA countries; and the non-Arab MENA states (see figure 2.1 below).

According to Sourial (2004), the Arab MENA states are commonly classified into three various categories. The first one contains the prior reformers (i.e., Egypt, Jordan, Morocco, and Tunisia); these states have established economic reform programs in the 1980s and equipped their economies to be more open towards foreign investments. Also, they have liberalised their trade and privatised specific state-owned businesses (Eltkhtash, 2013). The second group involves the oil exporters such as Gulf Cooperation Council countries (GCC), which primarily rely on producing, manufacturing and exporting oil and gas related products (Sourial, 2004). This group of MENA countries reached macroeconomic stability as a result of the continuous growth of international oil prices up to the period of this research.

Dissimilar to the second group of Arab MENA countries, the third classification contains states that still considered to be unstable economically, either for the reason that they are not politically stable such as Iraq, Libya, Palestine, Syria and Yemen or they are still considered at early steps of economic reforms such as Algeria and Lebanon. It is worth stating that both Libya and Iraq also depend on producing and exporting oil and gas, but they have not achieved the macroeconomic stability of the GCC countries for the reasons mentioned.

Recently, MENA economies have varied away from their natural resources by applying the notion of "economic free zones" to attract foreign direct investments (Alexandersen et al., 2014).

2.1: Map of MENA Countries
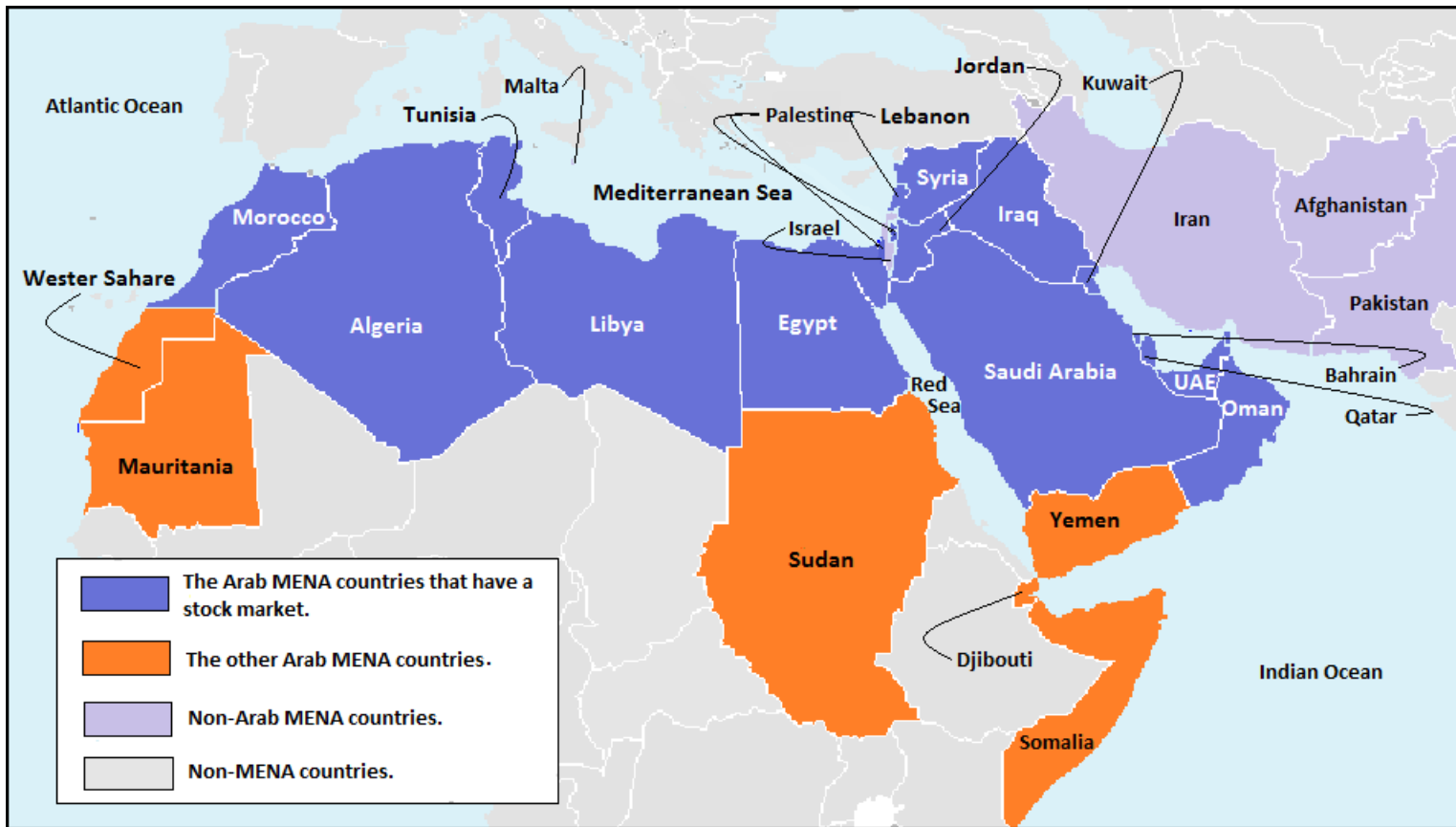
Source: Eltkhtash (2013).

The Arab MENA countries could also be classified based on their Gross National Income (GNI) per capita (see Table 2.2). This classification includes three main groups; first, high-income countries, $12,476 or more (i.e., Kuwait, Oman, Qatar, Saudi Arabia, UAE); second, middle-income group which is sub-divided into lower middle, $1,026 - $4,035 (Egypt and Morocco); and upper middle, $4,036 - $12,475 (Jordan and Tunisia); and finally, low-income countries, $1,025 or less (World Bank, 2015). This table implies that there is no low GNI class ranked country amongst the nine Arab MENA emerging markets.

Table 2.2: GNI Per Capita for Arab MENA Countries that have stock exchanges

No.	Country	GNI ($ US)	classification
1	Egypt	2,600	Lower middle
2	Jordan	4,380	Upper middle
3	Kuwait	48,910	High
4	Morocco	2,970	Lower middle
5	Oman	19,260	High
6	Qatar	80,440	High
7	Saudi Arabia	17,820	High
8	Tunisia	4,070	Upper middle
9	UAE	40,760	High

Source: the World Bank (2015).

In addition, MENA nations are economically and politically linked to each other for thousands of years, and they were trading partners through history. Accordingly, this shared history, common language, traditions, and religions have generated means of expanded economic opportunity and growth (Alexandersen et al., 2014). Many influences such as religious and political movements, along with natural resources, have formed the contemporary MENA region (Eltkhtash, 2013). Arguably, the major religions in the world have been originated in the MENA region, in particular, in the Middle East area, namely: Judaism, Christianity, and Islam (Kamal, 2009). Judaism emerged first, and then, from its bosom, Christianity arose and lastly came Islam, as part of the similar continuum. Crucially, despite the existence of Jewish and Christian minorities throughout the region, Islam has ultimately forged a shared religious and cultural bond (Alexandersen, Kobinger, Soule, & Wernery, 2014).

The focus point of this study is to explore and explain the annual reports' disclosure of environmental information by a sample of listed companies in the Arab MENA countries, and thus only the Arab MENA states with a stock market have been suggested in this study. Notably, 16 stock exchanges have been established within the Arab MENA states namely: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Libya, Lebanon, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syria, Tunisia, and United Arab Emirates (UAE). However, this study concentrates on companies listed in only nine Arab MENA countries (i.e., Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, and UAE). This selection was influenced by two primary reasons. First, these nine states have the greatest and the most active stock exchanges in the region with the moderately adequate availability of data for the empirical analyses. Second, they represent over 85% of both Arab MENA GDP and stock exchanges capitalisation.

Table 2.3 presents the legal structure of the nine Arab states selected for the current study. It points out that the legal system varies from one country to another. This position assists in recognising the impact of a country on CED adoption. This means that companies operating in a similar institutional environment (e.g., sector, country, and sub-region) are more likely to provide similar CED practices, reflective of mimetic pressures (Deegan & Jeffry 2006).

Table 2.3: The different Legal Systems of the 16 Arab MENA States

Country	Legal System
Egypt	A mixed legal system based on Napoleonic civil law and Islamic religious law; judicial review by Supreme Court and Council of State (oversees validity of administrative decisions).
Jordan	The mixed legal system of civil law and Islamic religious law; judicial review of legislative acts in a specially provided High Tribunal.
Kuwait	A mixed legal system consisting of English common law, French civil law, and Islamic religious law.
Morocco	A mixed legal system of civil law based on French law and Islamic law; judicial review of legislative acts by Supreme Court.
Oman	The mixed legal system of Anglo-Saxon law and Islamic law.
Qatar	the mixed legal system of civil law and Islamic law (in the family and personal matters).
Saudi	Islamic (sharia) legal system with some elements of Egyptian, French, and customary law; note - several secular codes have been introduced; commercial disputes handled by special committees.
Tunisia	The mixed legal system of civil law, based on the French civil code, and Islamic law; some judicial review of legislative acts in the Supreme Court in joint session.
UAE	The mixed legal system of Islamic law and civil law.

Source: The Central Intelligence Agency (CIA) (2013).

Table 2.3 also concludes that the selected countries have been substantially affected by either British Common Law or French Civil Law in forming their legal systems. This implies that the legal system and business culture inherited from the previous colonists could have their influences on CED practices in the region, reflective of normative pressures (Villiers & Alexander, 2010).

The Table 2.4 below provides a summary of each of the nine Arab MENA countries regarding their political and economic backgrounds, stock exchanges, and their financial reporting environment.

Table 2.4: The political, economic, and accounting profession characteristics of the sampled MENA countries.

Country	Political and Economic Background	Stock Exchange	Accounting Environment
Egypt	Egypt's population in 2016 is 93,546,396 (CIA, 2016; Hanafi, 2006). In 1922, Egypt had taken its independence from the British and the current governance system is republican (Eltkhtash, 2013). In 2011, the country witnessed a political change has deeply affected the Egyptian community (Ahmed, 2013). The economy was an agricultural based economy (Farag, 2009; Hassan, 2006). From 1991 to 2010, Programs of Economic Reforms have been employed to improve the Economy in Egypt (Abu-Bader & Abu-Qarn, 2008; Hanafi, 2006).	The Egyptian Stock Exchange (ESX) is the eldest in the MENA region established in1883 (EGX, 2016). The EGX is considered as the second biggest stock market in the area (Hassan, 2006). The market capitalisation of EGX was 488.2 Billion Egyptian Pound at the end of 2014 and with 419 listed firms.	The financial reporting practices have influenced by the UK approach (Abd-Elsalam, 1999). Also, the Egyptian Society of Accountants and Auditors (ESAA) plays a primary role in drafting accounting and auditing standards and principles. The IAAS and the IFRS have been introduced by the Permanent Committee for Standards of Accounting and Auditing (PCSAA) (Eltkhtash, 2013).
Jordan	The inhabitants of the Hashemite Kingdom of Jordan are estimated by 9.53 million in 2015 (Al-kheder, Haddad, Fakhoury, & Baqaen, 2009; Department of Statistics-Jordan, 2015). The Jordanian economy is one of the smallest in the region with inadequate supplies of natural resources (Al-Akra, Ali, & Marashdeh, 2009). Jordan depends on the tourism, phosphates and foreign direct investment (Nagi & Hamdan, 2009). In 2008, the global financial crisis had significant effects on the Jordanian GDP that has fallen by 1%.	Amman Stock Exchange (ASE) dated back to 1930 and considered a huge stock exchange in the region with 241 listed companies in February 2015 (Amman Stock Exchange, 2015). The market capitalisation of ASE has been declined from $40 billion in 2007 to $35.8 billion in 2008 as a result of the global financial crisis and then continued to fall to be about $25.52 billion in 2014 as a result of the Arab Spring.	The Jordanian Association of Certifies Public Accountants (JACPA) that established in 1987 requires the Jordanian listed firms to adopt IASs/IFRS in preparing and publishing their financial reports starting from 1997 (Abdullatif & Al-Khadash, 2010; Al-Akra et al., 2009; Al-Akra, Eddie, & Ali, 2010; Mardini, 2012; Obaidat, 2007).
Kuwait	Kuwait is a small nation in the region (Almujamed, 2011). In June 2015, Kuwait's population was roughly 4.1 million including 65% non-citizens (United Nations Department of Economic and Social Affairs, 2015). In 1961, the country obtained its independence from the UK and ruled by Al-Sabah royal family up to date (Al-Yaqout, 2006). By the discovery of oil in 1938, an economic growth happened in the country and oil became the dominant resource of the economy (Al-Omar, 1990; Rieger, 2013).	Kuwait Stock Exchange (KSE) established in October 1962, and the total number of listed firms was 205 in February 2015 (Kuwait Stock Exchange, 2015). The market capitalization of KSE has been influenced by the global financial crisis to be declined from $188 billion in 2007 to $107 billion in 2008.	In 1991, the KSE required all companies in Kuwait to comply with IAS and IFRS (Al-Bannay, 2002; Arussi, Selamat, & Hanefah, 2009; K Naser & Nuseibeh, 2003; Warf & Vincent, 2007).
Morocco	Moroccan's population Kingdom is estimated by 34.9 million in July 2012 (CIA, 2013). The Kingdom of Morocco has become an independent state in 1956 after being a French colony for decades (CIA, 2015). Morocco has constructed an open, market-oriented, and diverse economy that has been capitalised based on Morocco closeness to Europe and comparatively low costs of labour (Greene, 2011).	The Casablanca Stock Exchange (CSE) is established in 1929 (Casablanca Stock Exchange, 2015). Only 73 firms were registered in CSE in 2015.CSE market capitalization has been decreased from $75.49 billion in 2007 to $65.74 billion in 2008 attributable to the international financial crisis (Casablanca Stock Exchange, 2015).	In 1989, the National Accounting Council (NAC) was established to develop accounting principles and standards in Morocco (Anandarajan & Hasan, 2010). All corporations should publish their annual reports according to the Moroccan Accounting Standards (MAS) (Zoubi & Al-Khazali, 2011). Businesses also have an obligation to deliver consolidated accounts consistent with IFRS (Ahsina, 2012).
Oman	Oman's population is 4.9 million in 2016 including 171,978 migration (Almukhaini, Donesky, & Scruth, 2016; Jones & Ridout, 2005). After being a British colony from 1891 to1971, Oman achieved full global recognition in July 1970. The system of governance in Oman is a monarchy (Al-Jabri, 2008). The Omani economy relies on oil returns as a primary source of income (Al-Jabri, 2008).The GDP of Oman was considerably decreased from $60.93 billion in 2008 to $48.38 billion in 2009 reflective of the international financial crisis in 2008. Afterwards, Oman's GDP has been gradually increased over time to reach $81.79 billion in 2014 (CIA, 2016).	The Muscat Securities Market (MSM) was established in 1989 and 119 companies were listed on MSM in 2015 (Muscat Securities Market, 2015). Like other securities markets, MSM was influenced by the international financial crisis in 2008, and its market capitalisation decreased from $23.06 billion in 2007 to $14.91 billion in 2009.	Since 1992, all listed firms in Oman Stock Market are required by the Law of Accounting and Auditing Profession to adopt IASs and IFRS in preparing and publishing their annual reports (Al-Jabri, 2008).

Continuation of Table 2.4

Country	Political and Economic Background	Stock Exchange	Accounting Environment
Qatar	In 2016, Qatar's population is estimated at 2.3 million (Elawad, Diop, & Agied, 2016). Qatar was colonised by Britain from 1916 to 1971 and obtained its independence in 1971 (Al-Thani, 2010). The governance system is a constitutional monarchy (Al-Thani, 2010). Natural gas and oil represent roughly 70% of governmental returns and 85% of export (CIA, 2014). Recently, Qatar concentrates on improving the reserves of non-related natural gas and increasing outside inwards and private investment in non-energy associated sectors (CIA, 2016).	Doha Securities Market (DSM) was established in 1995, and only 43 companies were listed on DSM in February 2015 (Qatar Exchange, 2015). The market capitalisation of DSM has fallen from $95.49 billion in 2007 to $76.31 billion in 2008 as a result of the global financial crisis but returned to increase over the following few years (World Bank, 2016).	The reporting environment in Qatar ruled by either DSM or company low (Al-Khater & Naser, 2003; Hossain & Hammami, 2009; Naser, Al-Hussaini, Al-Kwari, & Nuseibeh, 2006). The financial reporting requirements are built on IFRS, and there is GAAP in the state (Zoubi & Al-Khazali, 2011).
Saudi Arabia	The Saudi Kingdom is the largest state in the Arabian Peninsula with 27 million inhabitants including 31% foreigners (Cordesman, 2003). The political system is a monarchy (Quandt, 2010). The Saudi economy is reliant on the oil (Quandt, 2010). The economy has been considerably affected by the international financial crisis, where the GDP of the country was decreased from $519.8 billion in 2008 to be $429.1 in 2009 and then substantially increased to reach $733.96 billion in 2013 (World Bank, 2015). Afterwards, the decline in oil prices in 2014 has negatively influenced the Saudi GDP to be falling from $753.83 billion in 2014 to $646 billion in 2015 (World Bank, 2016).	The Saudi Stock Market (Tadawul) established in the mid-1930s (Alshammary, 2014). In February 2015, 169 firms were listed in Tadawul (Tadawul, 2016). Tadawul capitalisation has fallen from $515.1 billion in 2007 to $246.3 billion in 2008 as a result of the global financial crisis (Alshammary, 2014). However, Tadawul capitalisation fell 12.9% ($421.1 billion) in 2015 attributed to falling oil prices and an escalation in political upheaval at the regional level (Joseph & Fernandez, 2016).	The financial sector is regulated by the Saudi Monetary Agency and all companies required to adopt the IFRS, although other companies were required to employ Saudi GAAP (Alsaeed, 2006; Falgi, 2009). However, starting from 2017 all listed firms in Tadawul are compulsorily required to comply with the IFRS (Tadawul, 2016).
Tunisia	In July 2016, the population of Tunisia is estimated at 11.4 million (CIA, 2016). Tunisia was a French colony and widely influenced by French politics, economy and culture from 1881 until it gained its independence in 1956, and the political system is a Republican (Eltkhtash, 2013). In January 2011, Tunisia experienced a radical political change that so-called the *Arab Spring* which has fundamental political and economic influences on the country and the entire region. A mixed economic system is adopted in Tunisia, and the Tourism, as well as manufacturing industries, are key sources of revenues (Global Edge, 2012).	In 1969, the Tunisian Stock Exchange (TSE), which is too recognised as Bourse de Tunis, was established as a public institution and 55 firms were listed on the TSE in February 2015 (Anandarajan & Hasan, 2010). Contrasting other states in the region, TSE capitalisation was not influenced by the global financial crisis in 2008 (World Bank, 2015).	By Commercial Law, all listed firms in the Tunisian Stock Market are required to publish audited and consolidated financial reports associated with the Tunisian GAAP (Damak-Ayadi, 2016) and the Tunisian GAAP is not totally compliant with the IFRS (Anandarajan and Hasan, 2010).
UAE	UAE's population is estimated at 9.3 million in August 2016 (Johnson, 2016). The British expatriate administration preserved influence in the UAE from the mid of 19th century until the state was unified in 1971 (Johnson, 2016). The petroleum industries had overwhelmed on the economy from 1973. Recently, transportation equipment, manufactured goods, and free trade zone are collectively representing about 70% of total imports in the state (Joseph & Fernandez, 2016).	Abu Dhabi Securities Exchange (ADX) is the main stock market in the country with 70 listed firms in 2015. The market capitalisation of UAE listed firms was affected by the global financial crisis post-2007 (World Bank, 2015).	The accounting principles and standards are still not codified, but firms generally are adopting IFRS to prepare, publish and audit their annual reports to be compliant with stock market requirements (Kehinde, Ranti, & Uwalomwa, 2016).

Table 2.4 presents the most important political, economic and accounting profession characteristics of the sampled countries, representative of the institutional environment of these countries. There are three central aspects which can be concluded from this table and employed to interpret the findings of the empirical analysis.

First, the selected countries are sharing common cultural characteristics and political systems. For instance, the democratic movement is at an early stage in the region, where the family ruling system is overwhelmingly controlling the region irrespective of diversifying the governance systems between monarchy and republican. This point could be associative of low country-level governance quality amongst MENA countries such as low voice and accountability, inefficient governments and highly corrupted institutions. The second aspect is related to the 2007-2008 global financial crisis that negatively affected all MENA economies which reflect decreased GDP and stock market capitalisation. This crisis has encouraged MENA governments (both oil-based and non-oil reliant economies) to adopt newly established economic reforms and programmes (e.g., transportation equipment, manufactured goods, and free trade zone) in order to attract more foreign investments. Since CED is a global demand in the modern business environment, any increase in CED practices after the financial crisis and the fall in oil prices could be reflective of strategies approved by these countries to attract FDI to their economies. The third aspect is associated with the reporting environment in the region. The vast majority of MENA's stock markets require listed companies to prepare their annual reports in line with the International Financial Reporting Standards (IFRS). This means that any improvement in CED practices could be attributed to the implementation of IFRS by MENA companies to be compliant with their stock market requirements.

2.3 The Arab MENA Sub-Regions

As has been mentioned in the preliminary part of this chapter, the Arab MENA region contains two primary sub-regions namely the North Africa and the Middle East. This study investigates the influence of the area of CED practices. For more examination, the region has been classified into two sub-regions namely Gulf Co-Operation Council (GCC) countries; and Non-GCC nations as presented in Figure 2.2. Table 2.5, thus, associates the sample of the study with two sub-regions. First, the non-GCC sub-region (i.e., Egypt, Jordan, Morocco, and Tunisia). Second, the GCC sub-region (i.e., Kuwait, Qatar, Oman, Saudi Arabia, and the UAE).

Table 2.5 shows that the vast majority of Arab MENA listed firms in the two sub-regions have adopted IFRS. Also, the table presents that 50.7%[1] of listed companies in the nine Arab MENA countries are in GCC sub-region; although 49.3% listed in the stock markets of the Non-GCC sub-region (North Africa and Middle East Non-GCC). Besides, the Table 2.5 shows that the collective market capitalisation of the stock markets that positioned in the GCC sub-region was greater than the other sub-regions. Comparatively, it can be observed that the market capitalisation of securities in the Non-GCC area were less than 22% of its GCC counterparts (78.22%[2]). The table demonstrates variations between sub-regions indicative of the prospective effect of sub-regions on CED and community of practice by listed firms within one region might exist; this will be discussed in chapters four, five, and seven of this thesis.

Table 2.5: Some indicators of the sampled countries by regions

The Arab MENA Region											
North Africa				The Middle East							
				Non-GCC				GCC			
Country	ASFLC	MC	LC	Country	ASFLC	MC	LC	Country	ASFLC	MC	LC
Morocco	IFRS or MAS**	69.15	73	Egypt	GAAP	82.50	219	Kuwait	IFRS	119.62	205
Tunisia	GAAP	10.68	56	Jordan	IFRS	30.86	241	Qatar	IFRS	20.27	43
-	-	-	-	-	-	-	-	Oman	IFRS	123.59	119
-	-	-	-	-	-	-	-	Saudi	IFRS	353.41	169
-	-	-	-	-	-	-	-	UAE	IFRS	77.08	70
Total		**79.83**	**129**			**113.36**	**460**			**693.97**	**606**

Note: this Table presents indicators of the three Arab MENA sub-regions. ASFLC= Accounting Standards for Listed Market Companies; MC= Market Capitalization of the Stock in 2015 ($ Billion); LC= No. of firms listed on the Arab MENA emerging markets in February 2015.

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[1] 50.7% = 606/(129+460+606)

[2] 78.22% = 693.97/(79.83+113.36+693.97)
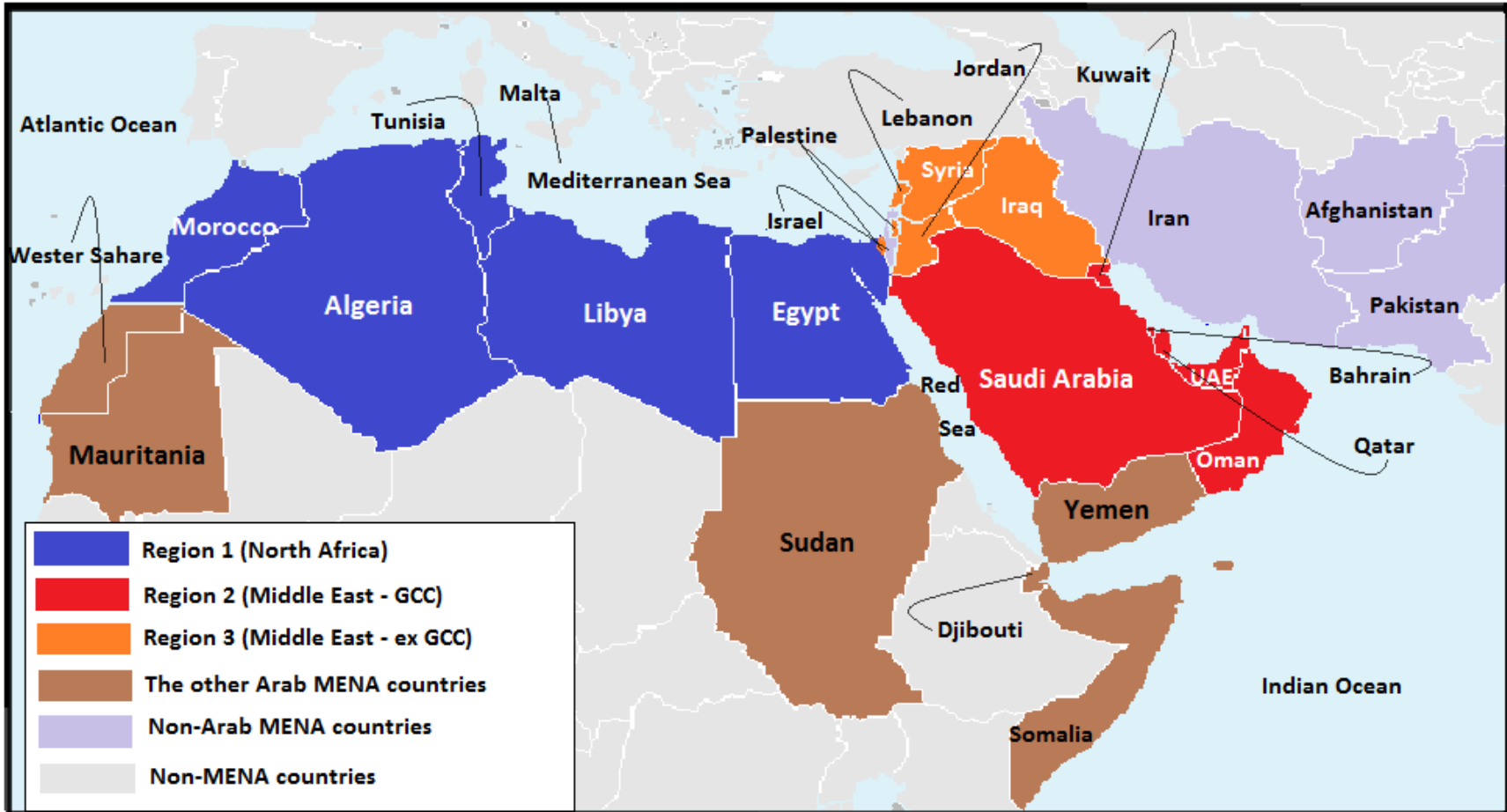
Table 2.6 below shows the mandatory and voluntary requirements of social and environmental responsibility performance and disclosure practices. There are several primary aspects which can be concluded from this table and employed to interpret the findings of the empirical analysis.

First, the governmental role (regulative pressure) in the development of corporate social and environmental responsibility (CSER), particularly in MENA countries, has been substantially increased recently with more countries paying attention to mandatory CSER-related issues, either through enacting new laws, regulations and legislation or through corporate governance reforms and listing requirements on the stock exchanges. For example, the UAE listed companies will have to allocate funds to, and to be involved in, social and environmental responsibility initiatives by the end of 2017. These initiatives will take place starting from 2018, and the ministry of the economy currently is working with the chamber of commerce and various economic departments to sort out the required modifications in present laws and policies to make corporate social and environmental responsibility compulsory for UAE listed companies (Zakaria, 2017). Similarly, legislation was introduced in Morocco in 2011 to give impetus to environmental and sustainable development (United Nations, 2012). Likewise, the Environmental Law No. 4/1994 in Egypt specifies different types of environmental pollution and penalties that could be imposed on companies in case of exceeding pollution limits. Additionally, the Saudi government has launched a vision to achieve sustainable social and environmental development that offers a greater understanding of the significance of CSER to the Saudi economy (Alhazmi, 2017) (see Table 2.6).

Second, along with governments being the primary player for CSER development, stock markets are also considered as main institutions for social and environmental development in the region. The Capital Market Act in Oman, for example, provides a set of provisions regarding corporate social and environmental responsibility and transparency (Khan, 2016). Likewise, Egyptian listed firms should be compliant with IAS 10 which requires companies to disclose any estimated environmental liability or loss if it is likely that the subsequent actions could lead to experiencing a liability or losing an asset at the financial statements date (Hanafi, 2006) (see Table 2.6).

Table 2.6: Shows regulatory vs voluntary aspects of social and environmental responsibility and disclosure practices in the sampled MENA countries

Country	Regulative Social and Environmental Responsibility and Disclosure	Voluntary Social and Environmental Disclosure
Egypt	• Company Law No. 159/1981 and the Capital Market Law No. 95/1992, require listed firms to publish the report of Board of Directors which offers an overview of the firm's actions during the fiscal year, - along with the financial statements and audit report within three months of the end of financial year (CMA, 2002). • Company Law No. 159/1981 and Capital Market Law No. 95/1992 require the use of Egyptian GAAP which follow International Accounting Standards (IASs) (El-Meligy, 1999). These accounting standards comprise 22 standards none of which addresses CSRD or CED. Nevertheless, there are two standards discussing corporate disclosure generally, namely Standard No. 1 concerning the disclosure of accounting policies and Standard No. 3 regarding the disclosure of financial information. • Environmental Law No. 4/1994 specifies different types of environmental pollution and penalties in case of exceeding pollution limits or for nonfulfillment of any article of the law along with guidelines for the control of environmental pollution. • Company Law No. 159/1981 and the Capital Market Law No. 95/1992 consist of provisions for the disclosure of certain social and environmental elements such as Hanafi (2006): - **Employees:** 1. The number of employees and total salaries (Company Law No. 159/1981). 2. Pension fund and social security costs (Capital Market Law No. 95/1992). 3. Employees profit share (Company Law No. 159/1981 and Capital Market Law No. 95/1992). 4. Provision for employee benefits costs (Capital Market Law No. 95/1992). 5. Cash payments to employees (Capital Market Law No. 95/1992). 6. Value-added statement (Capital Market Law No. 95/1992). **Charity/Community:** 7. Donations (two-year comparison list) (Company Law No. 159/1981). **Directors:** 8. Board of Directors Remuneration (Company Law No. 159/1981 and Capital Market Law No. 95/1992). 9. Salaries and Attendance/Transport Allowances of Board Of Directors (Company Law No. 159/1981 and Capital Market Law No. 95/1992). 10. Any monetary transactions with Directors (Capital Market Law No. 95/1992). 11. Any Debit or Credit Accounts for Board Of Directors and Managers (Capital Market Law No. 95/1992). • Egyptian listed firms should be compliant with IAS 10 which requires that companies have to disclose any estimated environmental liability or loss if it is likely that the subsequent actions could lead to experiencing a liability or losing an asset at the financial statements date.	• Minister of Economy Decree No. 503/1997 amended by Decree No. 256/1998 and Decree No. 345/2002 states that it is desirable to be responsible for providing environmental information, particularly for polluting industries (Hanafi, 2006). • The Minister of Economy Decree No. 503/1997 amended by Decrees No. 256/1998 and 345/2002 recommends companies to publish environmental reports voluntarily. • NGOs in Egypt such as civil and community development associations and professional syndicates are providing charitable projects and social welfare to the poor and acting as social networks where the government fails to give support. However, they are not effective pressure group and sometimes restricted by official limitations on their activities (Sowers, 1999). • IAS 10 suggests that Egyptian firms should have an environmental system, and environmental policy, and assessable environmental performance (Radhi, 2001).

Continuation of Table 2.6:

Country	Regulative Social and Environmental Responsibility and Disclosure	Voluntary Social and Environmental Disclosure

Jordan	• The Environmental Protection Law No.12 of 1995 amended by the Government as a Temporary Law cited as the Temporary Environmental Protection Law No.1 of 2003. In 2006, this Law has been accepted by both Houses of Parliament and King of Jordan, and cited as the Environmental Protection Law No. 52 of 2006, and became effective on October 10th of 2006 (Sharari, 2014)
	• The <u>1964 Companies Act</u> is the first legislation regarding companies in Jordan and was followed by the <u>Companies Act, 1989</u>.
	• The <u>Companies Act, 1997</u> enclosed a series of issues related to disclosure requirements on the basis of IAS and IFRS. However, it did not mention which social and environmental items Jordanian corporations ought to report, thus the requirements of the social and environmental disclosure are still limited by this Law.
	• The 2003 Audit Law has a narrow impact on the disclosure requirements in Jordan. However, it set out the role of the Jordanian Association of Certified Public Accountants (JACPA) regarding the compliance with IASs and auditing standards (Omar and Simon, 2011).
	• In the 2000s, the Jordanian government made noticeable effort to enhance the level of corporate social and environmental responsibility.
	• Indeed, Jordan has undergone an incremental movement towards enacting a new set of sustainability forums and social and environmental legislation across the country. For example (Bani-Khalid, 2017):
	
	    (i) In 2003 the Ministry of the Environment was formed to improve the quality of the environment, to contribute to the sustainable development and to preserve natural resources of Jordan.
	    (ii) The Environment Protection Law No. 52 of 2006 was enacted to be the primary legal framework for management and protection of social and environmental aspects within the Jordanian community.
		• Corporate social and environmental practices in Jordan are considered to be a part of the voluntary framework rather than a mandatory approach to achieve sustainable development in the country (Omar and Simon, 2011).
		• Jordan Environment Society (JES) was established in 1988 to protect the environment, and its primary aspects are water, air, soil and wildlife. JES collaborates with other organisations and specialists to determine and address the environmental problems. It works towards the adoption of application and policies of standards and procedures to protect the environment in the country (Al-Sharari, 2014).

Continuation of Table 2.6

Country	Regulative Social and Environmental Responsibility and Disclosure	Voluntary Social and Environmental Disclosure

Kuwait	• In 2001, the Foreign Direct Investment Law No. 8 was enacted to encourage inward foreign investment into the Kuwait economy. This law obligates investor not to violate the regulations and laws applicable in the country, particularly the responsibility to protect the environmental public health and not to expose others to risk (Kuwait Responsible Business Conduct, 2017).
	• The Kuwait Environment Protection Authority has been active in addressing environmental violations and enforcing environmental compliance.
	• In 2001, based on the regulations of the Act No. 210, the Public Authority for Environment was established which includes 89 article of obligations and requirements to be followed by companies to preserve the internal and external environment from pollution (Public Authority for Environment, 2017).
	• Item No (14) of Article (7) of the Environmental Protection Law No 42/2014 provides guidelines for improving the process of environmental management in Kuwait.
	• Also, the Environment Public Authority in Kuwait coordinates its work on environmental impact assessment with appropriate governmental organisations and private sectors (Environment Public Authority Planning & EIA Department, 2016).
		• There is no specific government program in Kuwait to encourage compliance with the responsible business conduct (RBC) which covers different environmental, social, and governance issues (Kuwait Responsible Business Conduct, 2007).
		
		• The Environmental and Social Impact Assessment System (ESIA) in Kuwait voluntarily requires submission of the following documentation (Environment Public Authority Planning & EIA Department, 2016):
		  1. ESIA Scoping Report including consultation with public and relevant parties.
		  2. Environment and Social Impact Assessment Study (ESIAS) including public consultation and disclosure. Disclosure of the ESIAS.
		  3. Self- monitoring Report on Construction and Operation.
		• The ESIA Scoping Report should provide different results such as (Environment Public Authority Planning & EIA Department, 2016):
		  1. An overview of the project, the applicable legislative and institutional framework.
		  2. A description of the key environmental aspects and project-environment interactions that should be addressed in the ESIA.
		  3. A description of the geographical area to be considered in the environmental baseline and the identification of impacts.
		  4. Recommendations on specific impacts identification and evaluation methodologies to be used in the ESIA.

Qatar	• In 1981 the Permanent Environment Protection Committee was established in Qatar which stresses the significance of the protection and conservation of the environment.
	• Article 33 of the environmental law states that:
	  'The State shall work to protect the environment and ecological balance so as to achieve sustainable development for the generations to come' (Qatar's Second Human Development Report, 2009).
	• In 2000, notable legislative and institutional environmental initiatives led to the establishment of the Supreme Council for the Environment and Natural Reserves (SCENR) followed by the enactment of the Environment Law No. 30 in 2002.
	• In 2008, the SCENR was upgraded to become the Ministry of Environment (Qatar's Second Human Development Report, 2009).
	• SCENR is accountable for environmental conservation and protection by the enforcement and implementation of environmental policies.
		• In 2009, Human Development Report (HDR) identified challenges and issues associated with three crucial environmental stress points namely, (i) the effects of climate change (ii) threats to the marine environment; and (iii) water security.
		• The 2009 HDR also concludes a number of recommendations that could help overcome these environmental challenges. These recommendations were carefully reviewed by key stakeholders, and succeeding refinement, served as inputs in the preparation of Qatar's first National Development Strategy 2010 – 2015.
		• The 2009 Qatar's Second HDR makes other recommendations that take account of the need to (HDR, 2009):
		  a. Ensure a comprehensive and integrated framework and policy for sustainable development.

	- Through SCENR, Qatar enforces a set of national environmental regulations, laws and standards such as (SCENR, 2005):
	  1. The Law of Environmental Protection No. 30 of the Year 2002.
	  2. April 17, 2005, Executive By-Law for the Environmental Protection Law No. 11 of 2000 and Law No. 30 of 20024.
	  3. The decision of Council Members of the Year 1998 establishing a permanent Emergency Committee.
	  4. The law is creating the permanent Committee for the Protection of the Marine Environment (1981).
	  5. Law No. 30 of the year 2002 outlines the present basis of environmental protection policy in Qatar.
		b. Reinforce the institutional framework for sustainable development.
		  c. Develop reliable and credible social and environmental data and information for evidence-based decision-making.
		  d. Establishing a national capacity for developing, implementing, monitoring and evaluating environment-related programmes and policies.
		- Qatar Energy and Industry Sector established the Sustainable Development Industry Reporting (SDIR) Programme in 2010. The SDIR Programme aims to enhance sustainability in the sector (HDR, 2009).
		- A voluntary initiative in 2010 promoted by SDIR encourages the top 36 corporations in the oil sector to publish annual sustainability reports to the Minister (HDR, 2009).

Oman	- The Muscat Securities Market (MSM) was established in 1988 as a government body responsible for the listing and trading of securities. The MSM seeks to ensure transparency by applying trading rules and listing requirements to listed firms. Among the listing provisions have direct relevance to environmental, social and governance (ESG) disclosure elements. Crucially, companies are encouraged to report a separate section on ESG and are required to comply with the provisions of the 2002 code on a comply-or-explain basis (Elghuweel, 2015). - The internal CG system in Oman was established in 1998 by Capital Market Act, No. 80. It has been revised numerous times in response to advances in local and global markets. - Corporate social and environmental responsibility is not a new idea in Oman but were increased recently under the guidance of His Majesty Sultan Qaboos. As more multinational corporations are competing on social and environmental initiatives (Khan, 2016). - The social insurance system was established in Oman by Royal Decree No. 72/1991 providing disability, death and old age pensions to the employees of the public and private sector (The Ministry of Health, Sultanate of Oman, 2017). - The Capital Market Act provides a set of provisions regarding corporate social and environmental responsibility and transparency. These provisions take the form of (i) quarterly and annual reports; (ii) obligations to disclose accurate information.	- The Environmental Sustainability Index (ESI), which includes more than 146 countries evaluating their capability to protect the environment ranked Oman 83rd internationally (King, 2008). - The Environmental Performance Index (EPI) that measures how close the state comes to broadly approved goals for environmental performance and disclosure ranked Oman lower than the GCC average (King, 2008). - The Capital Market Act emphases largely on corporate disclosure in annual reports, and does not provide ESG provisions to regulate the relationships between management and shareholders, among others (Elghuweel, 2015). - Together with Companies Act and Capital Market Law, the Code of CG practices is a sophisticated type of regulation that shapes the Omani ESG framework. - The Omani GC framework aims to promote a culture of transparency and accountability in order to secure a greater protection to the interests of shareholders and the community. - The Omani CG provisions have been drawn mainly from the 1992 UK Code, and its capability to improve ESG practice might be influenced, to a large extent, by the Omani context; thus, ESG disclosure levels appeared to be different from their developed counterparts (Elghuweel, 2015). - The GC Framework in Oman encourages companies to disclose detailed a narrative of their ESG performance.

Country	Regulative Social and Environmental Responsibility and Disclosure	Voluntary Social and Environmental Disclosure
Morocco	• A new labour code was issued in May 2003 to supervise individual working relationships in total transparency using clearer procedures regarding reshuffling dismissals' system and work contract in order to protect interests of companies and staff. Also, this new code is dealing with the development of the protections of women protection at work (El Yazghi, 2001). • Hassan II Fund for Social Development derived from privatisation operations, yielding benefits to investments, which integrate the environmental dimension and ensure a considerable number of jobs (El Yazghi, 2001). • The Industrial Pollution-Control Fund (FODEP) was founded in 1997 in order to persuade environmentally friendly "green" companies to benefit from a loan to fund their activities and projects (El Yazghi, 2001). • In 2011, legislation was introduced in Morocco to give impetus to environmental and sustainable development (United Nations, 2012).	• The Moroccan government has no regulative pressures on companies to exercise Responsible Business Conduct (RBC) or offers any partiality to such responsible companies. Nevertheless, firms are generally expected inform Moroccan authorities of their planned RBC involvement. Moroccan Authorities try to support firms' RBC programs by providing them permission to work and through applying for these programs to public-private partnerships (Caisse de Dépôt et de Gestion, 2007). • In 1959, a public financial institution called Caisse de Dépôt et de Gestion (CDG) was founded to receive, preserve and manage resources that need special protection. Also, CDG is considered as a first-class operator in the social, environmental and economic development in Morocco (Case of Morocco, 2006). • DELTA program was endorsed by the Environment Department in order to adopt the eco-efficiency principle in favour of small and medium enterprises (United Nations, 2012). • The Moroccan Centre for Clean Production emerged to provide environmentally sensitive companies with a tool for clean production - related activities and services (Caisse de Dépôt et de Gestion, 2007). • With respect to social and environmental responsibility reporting is quite limited and considered to be at its early stages in Morocco since its start dates back to 2003. • In 2008, Morocco also prepared a reform for good corporate governance and disclosure practices (Caisse de Dépôt et de Gestion, 2003). • In the environmental issues, Morocco has made many treaty ratifications such as the Convention on Climate Change, Protection of the Ozone Layer, and the Convention on Biological Diversity, the Control of Transboundary (Rim, 2014). • The Moroccan Association of Textile and Apparel Industries awards a "Fibre Citoyenne" label to socially and environmentally responsible corporations. • In 2006, Morocco joined the UN Global Compact network to provide support to firms that confirm their commitment to social and environmental responsibility initiatives (State Department's Office of Investment Affairs Investment Climate Statement, 2017). • In 2016, the Ministry of Employment and Social Affairs launched an annual award of gender equality to highlight Moroccan firms that promote women in the workforce (Morocco Responsible Business Conduct, 2017). • Although there is no legislation mandating specific levels of RBC in Morocco, NGOs and civil society organisations are also taking a progressively active role in observing and monitoring corporations' RBC performance (State Department's Office of Investment Affairs Investment Climate Statement, 2017).

Continuation of Table 2.6

Country	Regulative Social and Environmental Responsibility and Disclosure	Voluntary Social and Environmental Disclosure
Saudi Arabia	- In 1965, Saudi Company Law (SCL) was issued by Royal Decree No. M/6 to regulate companies' behaviour in the country (Shoult, 2006). - The Capital Market Law (CML) was issued by Royal Decree No. M/30 in 2003 to reform the Saudi market under one authority called the Capital Market Authority. The CMA concentrates on the commitment to applying good CG practices by asking companies to establish procedures for addressing conflicts of interests and set out policies for internal control (CML, 2003). - In 2006, the Corporate Governance Regulations (CGR) were issued to establish the guidelines and principles for Saudi listed companies on Tadawul in order to improve the commitment to the best corporate governance practices (CGR, 2006). - The CGR sets recommendations for numerous aspects of environmental, social governance practices, comprising disclosure and transparency (CGR, 2006). - The Islamic law "Shari'a" in Saudi Arabia is considered as the Basic Law of Governance which supports the sense of responsibility to others and any influences individuals and organisations could have upon the Saudi society. Key to social and environmental responsibility practices is the concept of Almaslaha, which includes the reason for benefits and good to society (Alhazmi, 2017).	- In 2004, the Saudi Arabian General Investment Authority (SAGIA) launched an ambitious program aims to achieve sustainable development and prosperity in Saudi Arabia through attracting foreign investment and reducing the unemployment rate (SAGIA, 2015). - The Saudi Arabian Responsible Competitiveness Index (SARCI) was founded in 2010 as a framework aims to assess businesses on the basis of their social, environmental and economic performance and disclosure practices (SAGIA, 2010). - Recently, the Saudi government has introduced the National Transformation Program, as part of Saudi Arabia's Vision of 2030 in 2016 which aims to enhance the level and quality of services and achieve sustainable development and prosperous (Alhazmi, 2017). - Also, the Saudi government launched initiatives to protect vital resources. One of the plans focuses on the use of water in agricultural zones, and that is blessed by renewable and natural sources. In this regard, the Saudi government collaborates with food manufacturers, distributors and consumers to decrease any resource wastage (Saudi Vision 2030, 2016).
Tunisia	- In 1988, the National Agency for Protection of the Environment restructured as the Environment Ministry's enforcement branch. - In 2014, Tunisia's National Constituent Assembly approved a new constitution that confirmed environmental rights. Article 44 states: "The state guarantees the right to a sound and balanced environment and contribution toward climate safety. The state shall provide the necessary means to eliminate environmental pollution" (NAWA, 2014).	- In fact, corporate social and environmental disclosure in Tunisia still heavily depends on voluntary initiatives (Bonsón and Brdnarová, 2014). - Tunisia has established, in 2009, the Tunisian Institute for Corporate Governance (TICG), which develops corporate disclosure practices for the future (NAWA, 2014). - In Tunisia, the acknowledgement and implementation of the social and environmental disclosure are relatively new, and it has become the most popular term since the mid-1990 (Belgacem & Omri). - Tunisia focuses on protecting the environment attempts to go beyond the original antagonism between economy and ecology by promoting the concept of sustainable development, since the Rio Earth Summit held in June 1992 (Belgacem & Omri). - From an accounting perspective, the Tunisian accounting framework provides guidance about corporate social and environmental disclosure as a supplement to financial reports (Bonsón and Brdnarová, 2014). - The efforts of Tunisia legislator voluntarily focus on two principles: social actions and environmental actions. In this regard, a plan for sustainable development was launched in Tunisia in 1996 (Belgacem & Omri).

Continuation of Table

Country	Regulative Social and Environmental Responsibility and Disclosure	Voluntary Social and Environmental Disclosure

UAE	• The Ministry of Economy Ministerial Resolution No. 518 of 2009 required all listed companies to adopt the rules of corporate governance which consist of developing social and environmental policy. On 30 April 2010, this Resolution regarding Corporate Discipline Standards and Governance Rules became effective (Naser & Hassan, 2013).
	• UAE listed companies will have to allocate funds to and be involved in, social and environmental responsibility initiatives by the end of 2017. In 2017 also, the Ministry of Economy has launched 11 initiatives to produce workplaces that adopt philanthropy as part of its core values and to monitor the companies' commitment to philanthropy. These initiatives will take place starting from 2018, and the ministry currently is working with the chamber of commerce and various economic departments to sort out the required modifications in present laws and policies to make corporate social and environmental responsibility compulsory for UAE listed companies (Vinke, 2014).
	• In January 2015, the Cabinet of the United Arab Emirates issued an order to implement the UAE Green Agenda 2015-2030. The Green Agenda aims to achieve two main objectives (UAE Green Agenda 2015-2030, 2015):
	    a. To put forward the state's ambition to become a successful model for the low-carbon green economy.
	    b. To enhance the sustainable development, competitiveness and protect the close environment.
		• In 2011, a local institute concerned with Corporate Governance had launched the Pan Arab Environmental, Social and Governance (ESG) index. The ESG index lists the top 50 corporations in the MENA region based on its Environmental Social and Governance score (Vinke, 2014).
		• Emirates Environmental Group (EEG) is a non-profit organisation established in 1993 aims to protect the environment through education and community involvement programs in Dubai. EEG is the only environmental organisation in the UAE with accredited status to the United Nations Convention to Combating Desertification (UNCCD) and the United Nations Environmental Program (UNEP) and the first NGO in the world received ISO 14001 and. EEG is one of the most prestigious environmental groups within the MENA region and prides itself on its environmental achievements (Emirates Environmental Group, 2013).
		• The Environmental Performance Card (EPC) awarded by the Ministry of Environment and Water encourages environmentally-sensitive companies which are compliant with environmental regulations and laws of the country through providing many advantages both economically and environmentally (SajadiFar, 2013).

Third, although some MENA countries such as Egypt, Kuwait, Saudi Arabia, Jordan and UAE have founded the required regulative and legislative framework for sustainable development, including social and environmental development, the mechanisms of enforcement are ineffective to assure compliance. For example, before 2000, it is argued that the Jordanian regulative and legislative frameworks were not eligible to enforce social and environmental initiatives, or at least to encourage firms to adopt better CSER practices (AlBitar, 2012). Additionally, it seems that there are extensive regulations and legislation to control the social and environmental behaviour of companies in Egypt; nevertheless, these regulations are either selectively or rarely enforced which resulted in a gap between environmental regulations and environmental practices in the country (Sowers, 1999) (see Table 2.6).

Fourth, corporate social and environmental disclosure in MENA countries still heavily depends on voluntary initiatives rather than mandatory regulations and standards (Bonsón and Brdnarová, 2014) and there is no a specific requirement of the environmental items that included in the developed disclosure index for this study in any of the investigated countries. These voluntary initiatives could encourage listed companies to disclose their social and environmental information through providing comprehensive guidance on social and environmental reporting using different types of mediums. For instance, in UAE an Environmental, Social and Governance (ESG) index has been launched in 2011 in order to assess and list the top 50 corporations in the country based on their level of ESG performance and disclosure practices (Vinke, 2014). Likewise, the Saudi Arabian Responsible Competitiveness Index (SARCI) was founded in 2010 as a framework aims to assess businesses on the basis of their social, environmental and economic performance and disclosure practices (SAGIA 2010). Additionally, a voluntary initiative was promoted in 2009 by the program of Sustainable Development Industry Reporting (SDIR) which encourages the top 36 corporations in the oil sector in Qatar to publish annual sustainability reports to the Ministry of Oil (HDR, 2009) (see Table 2.6).

Fifth, the civil society organisations (CSO) and NGOs in the sampled MENA countries seem to have less influence on CED practices. More specifically, the survival of companies in the MENA region could be associated with regulative pressures rather than social acceptance. For instance, NGOs in Egypt are acting as social networks where the government fails to give support. However, they are not effective pressure groups and sometimes restricted by official limitations on their

activities (Sowers, 1999). Similarly, NGOs and CSOs in Morocco are also taking an interestingly active role in promoting corporate social and environmental performance. Nevertheless, they are yet to be considered as key players in observing and monitoring CSER practices in the country (Morocco Responsible Business Conduct, 2017) (see Table 2.6).

Finally, Table 2.6 suggests that Egypt, Saudi Arabia and UAE have established better mandatory and voluntary requirements of social and environmental responsibility performance than the rest of the sampled MENA countries. The Islamic law "Shari'a" in Saudi Arabia, for example, is considered as the basic law of governance which supports the sense of responsibility towards others, and organisations according to Sharia law should act in an environmentally-responsible manner within the society (Alhazmi, 2017). Likewise, Capital Market Law No. 95/1992 in Egypt consists of provisions for the disclosure of certain social and environmental elements (Hanafi, 2006). It has been argued that the enactment of comprehensive social and environmental protection laws might lead to new environmental accounting regulations related to CED practices (UNCTAD, 1996). These environmental regulations and initiatives could, thus, be attributed to the recorded level of CED practices in those countries (See Chapter Eight).

2.4 Country-Level Governance Quality in the Arab MENA region

Each corporation works within a structure categorised by a state's regulations, and the associated varied cultural, social, and behavioural individualities are correlated within the country. CED is associative of broader social structures, such as NGO's pressure, and public and private rules and regulations which monitor firms' environmental behaviour (Campbell, 2007; Singh, House & Tucker, 1986). Such, country-level governance has substantial effects on corporate disclosure (Shen & Lin, 2012). For instance, governmental regulations on corporate social and environmental disclosure seem to influence a company's operations and disclosure practices (Campbell, 2007; Roe, 2011). However, the presence of formal rules and constitutional constraints may also act as a de-motivator for companies in disclosing information beyond that which is formally required (Amaeshi, Adi, Ogbechie, & Amao, 2006; Baldini et al., 2016). When a country has a relatively undeveloped governance system, the respect for the law decreases, and economic transactions become inefficient and disorderly (Porta & Lopez-de-Silanes, 1999).

The World Governance Index (WGI) has included more than 200 countries, measuring six governance dimensions starting in 1996 namely Voice and Accountability, Government

Effectiveness, Political Stability, Rule of Law, Regulatory Quality, and Control of Corruption (Kaufmann, Kraay & Mastruzzi, 2009). The collective indicators are calculated on the basis of hundreds of variables collected from comprehensive sources of existing databases. The aggregate data is reflective of the perspective of different parties on governance worldwide such as survey respondents, public and private sector experts, and NGOs (Kaufmann, Kraay, & Mastruzzi, 2011). CLG structures contain formal constraints (e.g., laws, economic and political procedures and regulations, and other restrictions on corporate behaviour), and informal rules covering unwritten social norms, codes of ethics and values and conventions (Kaufmann et al., 2011; Schiehll et al., 2014). Thus, CLG indicators might serve as an incentive for economic actors to be committed with regulations (Elamer et al., 2017). Therefore, governments in countries with rigorous CLG structures tend to require mandatory disclosure of social and environmental information and regulate market intermediaries and thus improving information asymmetries (Yoshikawa et al., 2014). Collectively, rigorous CLG can be considered as a valuable instrument of external governance to improve accountability and corporate disclosure quality (Elamer et al., 2017).

In the current study, only three CLG indicators[3] were used in the regression analysis in order to avoid multi-collinearity problems (Lensink et al., 2008). Consistent with previous literature (e.g., Enikolopov et al., 2014; Schiehll & Martins, 2016), the selection of these indicators was based on conducting a factor analysis. The selected indicators are voice and accountability (V&A), government effectiveness (GE), and control of corruption (CC). These three CLG indicators could be defined according to Kaufmann et al. (2011, p223) as follows:

1. *Voice and accountability (VA):*

"Indicates the extent to which a country's citizens are engaged in the selection of the government, as well as freedom of association, freedom of expression, and a free media".

2. *Government effectiveness (GE):*

"Refers to public services quality, civil service quality and the extent of its independence from political influences, the quality of policy implementation and formulation, and the integrity of the government's compliance with such policies".

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[3] The Worldwide Governance Indicators (WGI) are a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries.

3. *Control of corruption (CC):*

"Captures perceptions of how public power could be exercised for private gains, containing both grand and petty forms of corruption, in addition to 'capture' of the state by private interests and elites".

Table 2.7: Summary Statistics of Country-Level Governance Indicators across the Sampled MENA Countries

Variable	Egypt	Jordan	Kuwait	Oman	Qatar	Morocco	Saudi	Tunisia	UAE
Voice and Accountability									
Mean	17.80	26.40	29.60	19.00	23.20	28.40	3.20	36.40	20.40
Std. Dev.	4.82	0.80	1.21	0.64	2.05	0.49	0.40	14.01	2.59
Min	14.0	25.0	28.00	18.00	20.00	28.0	3.00	10.0	18.00
Max	27.0	27.0	31.00	20.00	26.00	29.0	4.00	50.0	24.00
Government Effectiveness									
Mean	28.60	56.60	53.40	63.20	77.60	50.80	55.60	55.00	83.20
Std. Dev.	9.27	3.74	4.43	2.24	1.97	2.50	6.12	4.63	3.89
Min	20.0	50.0	48.00	61.00	75.00	48.0	44.00	49.0	78.00
Max	43.0	60.0	61.00	67.00	81.00	54.0	62.00	63.0	90.00
Control of Corruption									
Mean	31.80	61.20	57.60	61.40	84.80	46.80	55.20	55.00	55.00
Std. Dev.	2.05	.4020	6.98	3.02	3.20	4.19	6.04	0.90	0.90
Min	28.0	61.0	50.00	57.00	82.00	42.0	44.00	54.0	54.00
Max	34.0	62.0	69.00	66.00	91.00	53.0	60.00	56.0	56.00

The mean values for the three selected CLG indicators (Voice and Accountability, Government Effectiveness, and Control of Corruption) that compiled by the World Governance Index (WGI) and interpreted by Kaufmann et al. (2011) are far higher in Kuwait, Tunisia, Qatar, Morocco and UAE compared to Egypt and Saudi Arabia as shown in the data presented in Table 2.7. For instance, the mean value for voice and accountability in Saudi Arabia and Egypt are 3.20, 17.80, respectively, while in Tunisia and Kuwait are 36.40 and 29.60, respectively. This implies that CSOs and NGOs in the sampled MENA countries, particularly in Egypt and Saudi Arabia, are ineffective pressure groups and sometimes their activities controlled by official limitations (Sowers, 1999). On this basis, NGOs in these countries might not have a substantial impact on CED practices where the survival of companies could be associative of regulative frameworks

rather than social acceptance. Likewise, for government effectiveness, Saudi Arabia shows a mean value of 55.60 compared to a mean score of 83.20 for UAE. Saudi Arabia is therefore classified as the poorest CLG system in the region. The Arab MENA region, therefore, provides a unique natural setting for investigating the influence of CLG indicators upon CED practices.

2.5 Conclusion

This chapter highlights and discusses the main themes associated with the Arab MENA region. Arguably, there is no exact definition of the region. Nevertheless, MENA states could be classified into two primary groups: Arab MENA nations; and non-Arab MENA nations. Amongst the Arab MENA states, just 16 countries have established stock exchanges, and nine of these equity markets (i.e., Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, and UAE) have offered detailed and consistent annual reports of their listed companies. Also, these nine states have the greatest and the most active stock exchanges in the region representing over 85% of both Arab MENA GDP and stock exchanges capitalisation. Therefore, these countries have been exclusively selected to be the sample of the current study.

These countries are economically diverse comprising of both resource-scarce countries, such as Morocco and Egypt, and those countries with oil-rich economies (i.e. Saudi Arabia, Qatar and Kuwait) (World Bank, 2015). The economic fortunes of the countries in the MENA region are expected to be considerably affected by two key factors; its economic structural composition which emphasises a fundamental role for the state and the legacy of economic policies built upon oil (World Bank, 2015). Some states, such as GCC, have a high Gross National Income (GNI) per capita, the other nations are upper middle or lower middle GNI; but then again, none of these states was labelled as low GNI. Recently, the economies of MENA countries have varied away from their natural resources (oil and gas) by applying the notion of "economic free zones" to attract foreign direct investments as a result of the financial crisis and considerable fall in oil prices. Furthermore, the political background shows that the region has been colonised by either the British or the French and deeply affected by their business culture and financial reporting practices. These variations could be indicative of the prospective effect of sub-regions on CED and community of practice by listed firms within one region might exist; this will be lately examined and discussed.

The listed companies in the region are required to prepare and publish their financial reports according to IFRS, excluding Egypt and Tunisia those who are using their local GAAPs along with IFRS. This implies that any changes in CED practices could be attributed to the approval of IFRS by companies to be in line with stock markets requirements.

The descriptive material in this chapter not only helps with selecting the sample of study and provides background context but also provides insights that could be of value in interpreting the results of the statistical analysis.

The next chapter reviews the previous literature on CED practices including environmental disclosure definitions, processes, sources, theoretical underpinnings, prior empirical studies. This chapter aims at identifying the existing gap in MENA's CED literature that which will be addressed in this study and interpreted using an institutional framework.

Chapter Three: Literature Review

3.1 Introduction

This chapter discusses previous literature on CED and seeks to achieve four central objectives. It first investigates the literature of CED in terms of the definitions, formats and process in annual reports. Section two discusses the perspective of institutional theory by looking at three types of isomorphic pressures (mimetic, coercive and normative) in relation to CED practices. The chapter then reviews the prior empirical research conducted in the contexts of developed, developing and the Arab MENA region countries. Throughout this chapter, the emerging empirical and theoretical gaps will be highlighted to be a key contribution to this study. Finally, the present chapter discusses how the hypotheses developed according to previous empirical research and framed based on an institutional framework.

3.2 Corporate Environmental Disclosure (CED) Practices

Over the most recent three decades, corporate environmental responsibility, performance, and disclosure have received special significance (Deegan, Rankin, & Tobin, 2002; Gray et al., 1995b; Parker, 2014; Kwarteng, Dadzie, & Famiyeh, 2016), as a result of pressures on companies to work in an accountable manner that positively contributes to the protection of the environment. This growing awareness regarding environmental issues has located businesses, at least in developed countries, under pressure to devote a substantial amount of resources to comply with environmental regulations (Johnston, 2005). Concerning the revenue, the increasing trend of environmentally conscious customers means that if corporations do not embrace a strategy of "*green production*", they could also risk mislaying sales (Stefan & Paul, 2008).

The increasing demand for more environmentally responsible behaviour raises the significance of corporate environmental disclosure. The past three decades also experienced notable improvements in corporate environmental reporting as well as enhanced disclosure regulation, the development of reporting guidelines, and the issuance of standalone environmental related reports, which has led to significant growth in the corporate disclosure of environmental information. Therefore, environmental disclosure to date has become an interesting subject of debate and examination amongst accounting researchers.

Investigation of CED in developed countries has been quite extensive, with the US, Australia, the UK and Germany being identified as having quite high levels of CED in annual reports (Hassan & Ibrahim, 2012; Iatridis, 2013). This growing interest in studying corporate environmental issues by developed communities has contributed as well to an increase of CED practices by many firms resulting in the voluntary issuance of independent environmental reports (Mitchell & Hill, 2009). In contrast, CED within the MENA region has been noted to be quite low, with environmental concerns not being as prevalent in firm operations as in the developed countries (Abu-Baker & Naser, 2000). A meta-review conducted into CED at a regional level, indicates further that the MENA region had the lowest CED concentrations in the world (O'Connor, 2006).

Additionally, earlier studies have primarily concentrated on the extent and nature of CED practices within companies' annual reports; its association with economic performance and strong reputation; as well as to the impact of certain firm characteristics on disclosing environmentally related information (Islam, 2009). However, there is no single accepted definition of what constitutes environmental information. Prior studies employed various measures for CED practices and used different environmental categories and items which could be associative of inconsistent research results. These differences increase questions related to the validity of the measures of CED along with the robustness of the documented results. This means that using weak research proxies for environmental reporting could lead to uncertain outcomes.

Thus, the key challenge according to environmental research is to delineate and measure CED practices (Clarkson, 1995; Deegan, 2002). In this regard, Deegan (2002, p 288) stated that:

"When describing what is disclosed, there has been much debate about how to measure and classify social and environmental disclosures."

CED has been defined in the previous literature based on an early survey conducted by Ernst and Ernst (1978) that considered the environmental disclosure as a crucial category in social disclosure reflecting specific elements such as natural resources conservation and pollution prevention. The majority of prior studies, however, has applied a mixed view of CED rather than individual items into key categories (Campbell & Beck, 2004; Islam, 2009).

Some previous studies also have no distinct definitions of certain disclosure categories or independently incorporated them into empirical analyses (Brammer & Pavelin, 2008; Deegan & Rankin, 1997; Post et al., 2011; Stanny & Ely, 2008). The current study, therefore, develops

a comprehensive disclosure index (involves five main categories which variously contain 55 individual environmental items) in order to measure CED practices in the MENA region effectively.

This chapter aims to provide an inclusive understanding of the relevant previous CED literature that was conducted in developed, developing, and MENA countries to identify the existing gap to be addressed in the current study. This chapter also seeks to establish a theoretical framework within which to analyse and discuss the results of this study. To achieve these goals, the researcher primarily focuses on reviewing earlier evidence on corporate environmental disclosure in traditional journals of accounting, which have been the primary channel for CED research. The main objective of this chapter is not to offer an exhaustive review of CED literature; rather than a concentrated review of previous research that investigates the different constituents, motives and theories that related to CED practices in various contexts. Research in traditional accounting journals centres on examining the value relevance and the determinants of certain CED practices, mainly in the context of developed countries. The list of such journals consists of many journals such as *Accounting Review, Accounting, Organizations & Society, Accounting, Auditing & Accountability Journal, International Journal of Accounting, British Accounting Review, European Accounting Review, Journal of Accounting & Public Policy, Accounting Forum, Critical Perspectives on Accounting, and Journal of Business Ethics.* These journals have issued a substantial amount of research on the measurement of CED, the role of environmental disclosure in creating corporate responsibility as well as explaining CED practices using different explanatory variables and from various theoretical perspectives (Berthelot, Coulmont, & Serret, 2012; Deegan, 2002). CED practices will be defined from different academic and practitioner points of view in the next section of this chapter.

3.2.1 Definitions of Corporate Environmental Disclosure (CED)

An early definition of CED practices offered by Gray et al. (1987, p ix) identifies it to be:

> "The procedure of communicating the environmental effects of organisations' economic actions to particular interest groups within society and society at large".

This definition includes extending the accountability of companies beyond the traditional role of providing a financial account to the shareholders. Such an extension is associated with the assumption that companies have a more inclusive responsibility than merely to make money for their shareholders. However, this definition has only focused on organisations' effects on

the environment that caused by their economic actions and discounted to some degree the voluntary undertaking of environmental activities by companies to contribute towards protecting the environment (Woodward, Edwards, & Birkin, 2001).

CED has also been broadly defined regarding the type of information that supposed to be disclosed as:

> "The disclosure of information regarding organisations' environmental impacts (O'Dwyer, 2002).

Additionally, Berthelt et al. (2003, p 2) assert that CED could be defined as:

> "The disclosure of the impact company activities has on the physical or natural environment in which it operates".

All the above definitions, however, did not pay attention to the mediums and methods that could be used by companies to disclose their environmental information such as annual reports, standalone environmental reports and websites. Moreover, these definitions focused only on firms' social and ecological impacts on the environment. This means that they did not mention the voluntary disclosure of environmental information. Arguably, CED could be considered as additional interpretations attached to the annual reports in order to evaluate the environmental commitment and performance of a given company (Berthelot & Cormier, 2003). As such, CED in annual reports has also been defined as being:

> "The incorporation into annual reports of a set of clauses and information items describing a company's past, current and future environmental management activities and performance" (Al-Drugi, 2013, p 42).

A more inclusive definition of CED was offered by Fun (2002, p 9) who has defined it as:

> "The procedure of communicating the environmental effects of an organisation's economic actions externally through the corporate annual report or a separate stand-alone publicly available environmental report."

Even though this definition has mentioned different mediums of CED practices, however, it still only focuses on the environmental effects of organisations' economic actions on a society and ignored the voluntary undertaken of environmental activities by a company in order to protect the environment as well as to contribute to society welfare apart of their economic actions.

Although these definitions did not indicate whether CED should be regarded as a voluntary or mandatory type of disclosure, Islam (2009, p15) provided a more comprehensive definition of CED as follows:

> "It is deemed to present a term that relates to the voluntary provision of information about the performance of an organisation in relation to the broader area and contexts of corporate social and environmental practices".

This definition classifies CED as a voluntary kind of practices that extended beyond the impacts of firms' economic activities on the environment to other voluntary actions conducted by companies to deliver services to society as a whole.

On the other hand, CED has been comprehensively defined from various perspectives of different international accounting bodies. Table 3.1 presents some of these definitions as follows:

Table 3.1: CED definitions from various practitioner perspectives.

The organisation name	CED definition
The Sustainability Working Party of the European Federation of Accountants (SWPEFA).	The information provided by an entity in respect of the environmental issues associated with its operations and the objective of external environmental reporting as being the provision of information about the environmental impact and performance of an entity that is useful to stakeholders in assessing their relationship with the entity under review (FEE, 2000, P . 9).
The Association of Chartered Certified Accountants **(ACCA).**	The term commonly used to describe the disclosure by an entity of environmentally related data, verified (audited) or not, regarding environmental risk, environmental impacts, policies, strategies, targets, costs, liabilities, or environmental performance, to those who have an interest in such information, as an aid to enabling/enriching their relationship with the reporting entity via either: the annual report; a stand-alone corporate environmental performance report; a site-centred environmental statement; or some other medium for instance, staff newsletter, video, CD-ROM, website" (Ishwerf, 2012, PP . 23-24).
International Institute for Industrial Environmental Economics **(IIIEE)**	It is an umbrella that describes the various means by which companies disclose information on their environmental activities (IIIEE, 2002, P.7).
United Nations Commission on Transnational Corporations' Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting **(UN ISAR).**	Information made publicly available by a company, through any of the key channels or mediums, about that company's interaction with its physical environment (UN ISAR, 1997).
International Federation of Accountants **(IFAC)**	The management of environmental and economic performance by the improvement and application of suitable environment-related accounting systems and practices. Although this can contain reporting and auditing in some corporations, environmental management accounting classically includes life-cycle costing, benefits assessment, strategic planning for environmental management, and full-cost accounting (IFAC, 2005, p.19).
Institute of Chartered Accountants in England and Wales and the Environment Agency **(ICAEW).**	CED is the process of measuring, managing and reporting on the impacts a company has on the environment (ICAEW, 2009).

Table 3.1 emphasises marked differences between the various definitions. Firstly, there seems to be an acknowledgement across the bodies that CED can be presented through various mediums other than company annual reports (see ACCA, 2004; UN ISAR, 1997). Secondly,

these definitions indicated the process of environmental reporting and auditing reflecting a more practitioner understanding of CED than their academic counterparts (see ACCA, 2004; IFAC, 1998). Thirdly, the definitions of accounting bodies focused on the environmental effects of companies' economic activities alongside with the other environmental actions that could be undertaken by companies to deliver positive values to society (see UN ISAR, 1997). For instance, the expression "*company's interaction with its physical environment*" not only refers to the influences of an associations' economic activities on the environment but besides it could cover other environmental actions, which may be carried out to contribute towards protecting the environment. Finally, these definitions did not identify the type of environmental disclosure (voluntary or mandatory) by using the term information which denotes any type of disclosure (see FEE, 1999; ACCA, 2004; UN ISAR, 1997; IIIEE, 2002). In contrast, academic definitions recommend that more consideration must be given to voluntary environmental disclosure rather than mandatory (Islam, 2009). This could be attributable to the lack of mandatory requirements for environmental disclosure either at local or international scales.

Arguably, there is a difference between "*accounting for the environment*" and "*environmental accounting*" (Cho & Patten, 2013; Deegan, 2013; Gray, 2013; Thornton, 2013). The first one is a procedure that is still unclear where companies are held responsible to various society members for environmental effects resulted from their activities. *Environmental Accounting*, on the other hand, is a process embedded in financial accounting system whereas companies are held responsible to their owners for any offences – counting non-compliance with environmental standards – that may affect the cash flow of business. The difference between the two processes describes the difficulty of defining CED practices. Although "*accounting for the environment*" calls for corporate disclosure of a set of environmental information required by the regulator, the disclosure requirements of "*environmental accounting*" are still ambiguous since its rules are also unwritten. Thus, broader definitions of the corporate environmental disclosure have been adopted by accounting bodies to include all sets of related information that achieves the requests of various stakeholders (i.e. environmentalist groups, investors, regulators, civil society organisations, government agencies, etc.).

To reduce the confusion surrounding the terminology used in the literature, the term 'Corporate Environmental Disclosure' (CED) as applied by Institute of Chartered Accountants in England and Wales (ICAEW, 2009) is selected for this study. As such, CED is defined as "a term related to the voluntary provision of information about firm performance in relation to the broader area of corporate environmental practices". This view is consistent with the aim of this

study to investigate CED practices of listed firms in nine Arab MENA emerging markets. The next section discusses the main forms that have been used in the literature to examine CED practices in different environments.

3.2.2 Forms of Corporate Environmental Disclosure (CED)

The discussion of CED definitions from various academic and practitioner perspectives in the previous section leads to another argument related to the medium that could be used by companies to disclose their environmental information and the content of environmental reports. Conventionally, companies disclose their environmental information through hard copy documentation (e.g. annual reports, stand-alone environmental reports, stand-alone corporate environmental responsibility reports, press releases, news media, advertisements, etc.) (Lodhia, 2005; Zeghal & Ahmed, 1990). However, Suttipun & Stanton (2012) state that the most popular and widely utilised mediums for CED are annual reports, websites and standalone reports. In this section, the different methods that have been used in the prior literature to investigate CED practices are highlighted in order to justify using annual reports to examine MENA's CED practices in the current study.

3.2.2.1 Corporate Annual Reports

Previous CED empirical evidence reports that firms operating in developed countries improved their annual reports to include such environmental information, at least to some extent. Firms employ these annual reports as material to highlight their environmental performance as well as to tackle other environmental issues that could be of interest to a community (Gray et al., 1996). While firms can deliver their environmental message by using many different mediums such as annual reports, websites and standalone reports (Rondinelli & Berry, 2000; Tilt, 1994), the annual reports are considered to be the most regularly used form of CED practices (Harte & Owen, 1991). Crucially, a company's annual reports have become a more sophisticated product in the modern business environment and considerably contribute towards enhancing the environmental reputation of a company which is also potentially reflected in reducing costs and increasing revenues (Campbell & Beck, 2004). Therefore, this study was motivated to investigate CED practices in annual reports.

Although, companies annual reports were regarded as the most preferred medium to disclose different types of information, including environmental information, to various groups of stakeholder (Campbell, 2004; Guthrie & Farneti, 2008), CED is not limited to annual reports

and could also be published using other types of media such as firms' websites and environmental stand-alone reports (Tilt, 1994).

Arguably, using annual reports exclusively to disclose the environmental information might not be representative of all the environmental activities undertaken by a company to protect its close environment, reflective of an increased trend amongst stakeholders to use alternative sources of CED practices (Frost, Jones, Loftus, & Laan, 2005; Guthrie, Cuganesan, & Ward, 2008; Lodhia, 2003; Rizk, 2006; Staden & Hooks, 2007; Tilt, 2001; Zeghal & Ahmed, 1990).

Collectively, the following reasons have influenced the selection of annual reports to be a source of environmental data in the current study. First, the annual report is regarded to be the primary source of information for decision-makers (Belal et al., 2011). Second, the annual report is freely published and less challenging to be accessed rather than other kinds of reports (Epstein & Freedman, 1994). Third, the annual report is also an institutionalised form of corporate disclosure prepared on a standard basis every year (Buhr, 1998). Fourthly, it is broadly known as holding a high level of credibility and reliability (Deegan & Rankin, 1997). Fifth, this concentration on a company's annual report in the current study is also in line with prior social and environmental disclosure studies (Gray, 2006). Therefore, what companies do not report can be of interest, not just what they do disclose (Adams & Harte, 1998). The next subsection highlights corporate websites as mediums of CED practices.

3.2.2.2 Corporate Websites

Accounting cannot be isolated from the recent growth of the advanced information technology and more specifically in which related to the World Wide Web and its usage in the electronic commerce. For instance, the Security and Exchange Commission (SEC) in the US asked firms to submit all their information online on their websites (Williams, 1999; Williams & Pei, 1999). Although various companies have established their own websites that used to disclose their accounting information, empirical studies proved that the effect of this method on a company's disclosure practices is still considered at its infancy stage (Williams & Pei, 1999).

Previous studies highlight substantial advantages of using the websites over traditional annual reports as a medium of CED, such as promoting the harmonisation of disclosure practices, transferring the environmental information to a wider range of stakeholder (Williams & Pei, 1999). In contrast, there are some major disadvantages of using firms' websites to collect environmental data applying content analysis technique. For instance, capturing environmental

data from websites that of the possible *ephemerality* of the content, where data captured one day and employed as evidence of CED can be deleted the next day, therefore rendering the problematic of content analysis replicability (Campbell & Beck, 2004). Nevertheless, using websites as a method of CED practices has experienced an increased trend over all the world (Adams & Frost, 2004).

Accordingly, using annual reports only as a method for CED practices might not be sufficient to cover all CED activities. Arguably, firm' websites are expected to draw a better image of CED practices of a given company (Williams & Pei, 1999). The environmental reports, furthermore, should be periodically provided, using different formats, to ensure facilitating useful comparison between these reports over time. Thus, the environmental information should be checked, verified and audited to achieve the required level of reliability and validity of CED practices (Dixon-Woods, Agarwal, & Jones, 2005).

Recent empirical evidence debates that there are no substantial differences in CED practices provided through annual reports and websites among listed companies on Thai Stock Exchange (Suttipun & Stanton, 2012). In contrast, the earlier evidence presented mixed results in this regard (Williams & Pei, 1999). Although more CED practices were documented in websites than in annual reports across Australian and Singaporean companies, no significant differences have been noted in CED practices using both methods between Malaysia and Hong Kong. Arguably, these differences could be associated with different country-specific pressures such as regulatory requirements and professional guidelines, in particular, in the context of developed countries. The following subsection outlines the stand-alone environmental reports.

3.2.2.3 Stand-Alone Environmental Reports

The separate stand-alone reports of environment information have been increasingly used by companies around the world (Guthrie & Farneti, 2008; Holland & Foo, 2003). Crucially, countries such as Sweden, Netherlands and Denmark required firms to report their environmental information using a variety of methods including standalone environmental reports (Yusoff, Yatim & Nasir, 2016). For example, in 1999 the Dutch government has issued a provision requiring firms to provide stand-alone environmental reports for both public and government (Hibbitt & Collison, 2004). These reports should be associated with information linked to various subjects such as solid clean up, solid pollution, emissions and the firms' environmental policy. An international survey carried out on corporate responsibility reporting concluded that about 79 % of the Global Fortune Top 250 (GFT) had published their

environmental information in separate stand-alone reports, while other companies have integrated the environmental information within their annual reports (Ishwerf, 2012). Another survey was conducted to classify certain features of stand-alone environmental reports in comparison with annual reports points out that a process of verification is needed for both stand-alone environmental reports and annual reports to secure the reliability of the reported environmental information (Solomon, 2000). Furthermore, adopting such disclosure guidelines and employing independent auditors could enhance the quality of CED practices published in stand-alone reports (Hammond & Miles, 2004).

International organisations (e.g., Global Reporting Initiative (GRI) 2000; British Standards (BS) 7750; and International Organisation for Standardization (ISO) 14000) have made considerable efforts to develop CED guidelines. However, they have not yet agreed on specific guidelines concerning certain environmental issues; thus, earlier empirical evidence suggests that establishing external standards could be regarded as an efficient way to improve the quality and quantity of CED practices internationally (Harte & Owen, 1991). The controversial issues regarding CED practices are associated with questions involving inter alia: what is the content of environmental reports, what kind of indicators must be used in reporting, what are the appropriate methods to collect and analyse the environmental data, and in particular, how the environmental reports will be verified in the case of the absence of such professional guidelines and governmental regulations? (Ishwerf, 2012). Collectively, it is an imperative to establish CED guidelines to answer these questions and to develop the quality of CED practices at a global scale.

Thus, the content of environmental report should meet stakeholders' requirements to be considered as an efficient method of achieving firms' objectives. Notably, stakeholders can help firms by evaluating the environmental impact of their activities and providing constructive feedback on their environmental performance; then executives can make their decisions up regarding CED practices (Dixon-Woods et al., 2005). The environmental information must be reasonable to meet the requirements of different groups of users.

In brief, the annual report remains the principal means of systematic accountability to all stakeholders or user groups and a key means of corporate communication. It is an institutionalised form of corporate disclosure prepared on a standard basis every year (Buhr, 1998) with a relatively high level of credibility and reliability (Deegan & Rankin, 1997), and it is freely published and less difficult to access than other kinds of reports (Epstein &

Freedman, 1994). Often it will be accessible via a company's website, but in the Arab MENA region, it is rare for the website (if there is one) to disclose additional information regarding the company's relationship with the environment. Likewise, standalone environmental reports are not common. For these reasons, the focus of the current study is upon annual reports, which is in line with much of the previous literature (Gray, 2006), especially within the Arab MENA region (Al-Ajmi et al., 2015; Habbash, 2016; Hussainey et al., 2011).

In the next section, the process of CED practices will generally be discussed.

3.2.3. Corporate Environmental Disclosure Process

In the contemporary business environment, executives are required to consider the demands of their stakeholders concerning their companies' CED practices. This matter of imperative significance is stemming from the need to determine what kind of environmental information should be published in company reports (Larrinaga, Carrasco, & Correa, 2002). The process of environmental disclosure reveals how a company achieves its environmental obligations in order to manage the public. Debatably, businesses employ CED practices to achieve various advantages. For instance, firms seek through reporting the environmental information to legitimise their economic activities as well as to obtain the approval of the society (Iatridis, 2013). Thus, CED is considered as an important tool in legitimising corporate strategies by managing its stakeholders along with gaining their approval and support.

Particularly, CED process could be employed as a method to improve companies' transparency, as well as to enhance corporate picture and to provide useful information for decision makers concerning a company's activities (Adams & Whelan, 2009; Othman, Darus, & Arshad, 2011). Furthermore, CED practices could be used by the management to motivate internal progress, also to achieve positive effects on share prices and to avoid possible regulatory pressure in addition to being more socially normative (Ishwerf, 2012).

In the 1990s, European governments (e.g., Spain in 1998) required companies to disclose specific environmental aspects in their annual reports such as environmental assets, liabilities, expenses, and revenues (Larrinaga et al., 2002). Likewise, international organisations have developed guidelines for CED practices such as the Public Environmental Reporting Initiative (PERI) guideline in North America and the International Corporate Environmental Reporting site guidance at an international scale (IIIEE, 2002).

Arguably, the guidelines of environmental reporting are more likely to be in the formula of both quantitative and qualitative approaches as well as monetary and non-monetary data by using various types of media (Mathews, 1997). Previous literature has classified CED practices into three categories: (1) formal statements explaining the procedures of the environmental policy, (2) qualitative and quantitative descriptions of the environmental policy applied by a given company, (3) combinations of the first and second (Moneva & Llena, 2000). Also, the qualitative environmental information is divided into two main areas comprising of (Moneva & Llena, 2000, p 14):

(a) **Generic information** which includes very extensive data on the inter-relationship between the business's action and the environment, such as the declaration of intent to adopt an environmental policy and the approval of sustainability.

(b) **The qualitative information** is containing details about environmental policies and activities, which have previously been planned or carried out by the corporation. For instance, becoming a party to an external environmental commitment, measures adopted to obtain environmental certifications.

Furthermore, the quantitative environmental information was also classified into two primary topics comprising of (Moneva & Llena, 2000, p 14):

(a) **Quantitative non-financial information**: containing quantified details about the impact and measures take on the environment. For instance, the volume of reduction in pollution emissions, the size of recycled materials, and the savings of energy.

(b) **Financial reporting**: which includes the economic and financial data concerning environmental activities.

Although there are no commonly agreed guidelines for the content of environmental reporting; however some international initiatives propose relevant content of CED practices (Tilt, 1994). For example, IIIEE (2002) suggests that every CED guideline should cover at least the following elements: organisational profile, environmental management, environmental policy, emissions, legislative compliance, life cycle perspective of product impacts, resource efficiency, and environmental liabilities and costs.

Arguably, CED practices have not been guided by largely accepted principles and standards to be clearly applicable to companies' annual reports. This means that the absence of internationally agreed CED standards and principles could lead to distinct CED categories and

practices between the countries across the world. For instance, the Federation des Experts Computable Europeans (FEE) encourages firms to adopt certain principles and qualitative characteristics of the financial disclosure standards in the process of environmental reporting to make it more credible and useful type of practices (FEE, 1999).

Also, the Association of Chartered Certified Accountants (ACCA) in the UK proposes that corporate environmental information could be disclosed by using a number of forms and is expected to reflect the reality of company's environmental performance, as well as to include the following issues: the organizational profile; a CEO's statement; independent verification; key impacts; the scope of report; policies; governance; stakeholder engagement; systems and procedures; targets and achievements and eventually performance and compliance (Ishwerf, 2012). The ACCA focuses on the association between CED practices and the general strategy of a company by connecting its targets and achievements to the procedures and practices of that company.

The Korean Financial Accounting Standards (KFAS) also asked companies to incorporate CED practices into their annual reports (KFAS, 1996). The environmental reports, furthermore, should cover the following categories: safety & accidents, environmental regulations & policies, consumption of resources & energy, waste treatment and by-products, and environmental investments (Choi, 2006). This guideline emphases the content of environmental information that should be integrated within firms' annual reports in Soth Korea.

In 2009, the Institute of Chartered Accountants in England & Wales (ICACW) issued a new guideline for environmental reporting in annual reports. This guidance addresses environmental issues relevant to annual reports and seeks to help those people who prepare, audit and use the annual reports in identifying certain environmental concerns that related to the environmental disclosure in order to assure its reliability (ICAEW, 2009). This guideline was written in a style of question and answer and includes some examples of good CED practices from existing accounts in annual reports to support the readers. Moreover, it includes such information in annual reports, offers a chance to concentrate on the primary concerns that which have an impact on business performance, involving that opportunities and influences connected with corporate environmental performance. Some key issues that included in this guideline are (ICAEW, 2009, p VII):

- EU Environmental Directives, their implementation in UK law, and their importance to the business.

- Accounting standards, interpretations and exposure draft with UK significance and their environmental implications.
- Clear examples of existing good CED practice from accounts and annual reports.
- Particular units of accountants and auditors to address their separate needs.

Concerning the association between the Financial Reporting Standards (FRS) and the environmental implications, this guideline provides such relevant information could be presented in Table 3.2 as follows:

Table 3.2: The Association between FRS and the Environmental Implications

FRS No.	Title	Environmental implications and examples
FRS 3 (IAS 1)	*Reporting financial performance*	Environmental knowledge of elements of the business can be compared with the financial impact of on-going operations, acquisitions and discontinued operations. There is no mandatory disclosure of actual environmental impacts (in FRS 3 although, for listed companies, there is in the Companies Act2006) so that the detailed financial information can only be matched with a general understanding of the type of environmental impacts expected.
FRS 12 (IAS 37)	*Provisions, contingent liabilities and contingent assets*	It is often the case that environmental liabilities, related to waste, pollution, etc are difficult to forecast either because of uncertainties over timing or value or both. Typical examples would be a long-term waste (such as radioactive waste) where the plan is to carry out some waste management process in the far future, and the technology may be an unknown and contaminated land where the cost of remediation may not be clear until the work has begun. The accounting policy chosen for emissions obligations will depend on the overall accounting model that is being used for emissions and hence impact on the liabilities measured.
FRS 18 (IAS 8)	*Accounting policies*	Assets and liabilities, for example, can have a high environmental impact, and the accounting treatment of them can vary within the limits of the existing standards. Revaluing land on a regular basis would mean for example that the carrying value on the balance sheet would more closely reflect its real, commercial value taking into account environmental incidents, contamination and remediation. Even at cost, these environmental incidents may give rise to impairment. The disclosure of such accounting policies is critical to a proper understanding of the accounts and for comparison of different organisations. This point applies equally to the environmental significance.
FRS 21 = IAS 10	*Events after the balance sheet date*	Environmental examples can illustrate the distinction made in this standard. An entity might become aware shortly after the end of its financial reporting year of a pollution incident, for example, seepage of chemicals, which has gone undetected for some time (before the balance sheet date). Otherwise the effects of an environmental incident, for instance, an offshore oil spill, happening after the time of assessment must not be documented no matter how significant.
FRS 29 (IFRS 7 with IAS1)	*Financial instruments: disclosures*	If an organisation is significantly affected by the risk associated with its use of emissions trading would require additional disclosure.

Source: ICAEW (2009, pp 59-61).

Accordingly, ICAEW (2009) guideline assists firms to address issues related to transparency in their disclosure of financial and environmental elements, since stakeholders progressively concentrate on CED practices.

While, CED could include any information regarding environmental impacts, audits and policies, it could also include other related issues such as the environmental benefits of products, environmental expenditures, environmental liabilities and any details related to sustainability operations (Al-Drugi, 2013). However, the most common environmental disclosure practices are related to the environmental impacts of products & processes and environmental policies (Thomson & Bebbington, 2005), as the main purpose of CED is to change perceptions to some extent and to educate '*others*' about a company's activities and its effects on the environment (O'Dwyer & Gray, 1998).

The examples mentioned above of CED guidelines imply that there is no a single internationally accepted guideline regarding environmental reporting, indicative of variations in CED practices between countries. However, there are some attempts to introduce globally accepted guidelines to CED practices. In 1997, the Coalition for Environmentally Responsible Economies (CERES) had established the Global Reporting Initiative (GRI) to internationally develop applicable and acceptable guidelines for the disclosure of companies' economic, social, and environmental activities (Toppinen et al., 2012). GRI is considered as a holistic framework for sustainability reporting with a number of reporters exceeded 1500 by January 2009. The GRI[4] involves representatives from several corporations in diverse sectors, Non-Governmental Organisations (NGOs) and the United Nations Environment Program (UNEP).

The primary reason for establishing GRI is that there was no recognised guideline on what voluntary environmental and social reports should cover (Toppinen, Li, & Tuppura, 2012). As a result, there was no probability to facilitate comparisons between different companies' reports concerning their CED practices. GRI also has the determination to continuously develop their guidelines by creating what so-called the group of Structured Feedback Companies (SFCs), which offers suggestions to the GRI about the aspects that should be designed and improved in relation to the guidelines for reporting (Hedberg & Malmborg, 2003).

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[4] To ensure that these guidelines achieve their targets, a council of stakeholder regularly assesses what the arrangement must be and what kind of information should be reported (Hedberg & Malmborg, 2003).

Table 3.3: List of Performance Indicators by Category under GRI Framework

Economic Performance Indicators	
1. Economic performance	4 Indicators
2. Market presence	3 Indicators
3. Indirect economic impacts	2 Indicators

Environmental Performance Indicators	
1.Materials	2 Indicators
2.Energy	5 Indicators
3. Water	3 Indicators
4. Biodiversity	5 Indicators
5. Emission	10 Indicators
6. Products and services	2 Indicators
7. Compliance	1 Indicators
8. Transport	1 Indicators
9. Overall	1 Indicators

Social Performance Indicators	
A. Labour Practices and Decent Work Performance Indicators	
1. Employment	3 Indicators
2. Labour	2 Indicators
3. Occupational health and safety	4 Indicators
4. Training and education	3 Indicators
5. Diversity and equal opportunity	2 Indicators
B. Human Rights Performance Indicators	
1. Investment and procurement practices	3 Indicators
2. Non‑discrimination	1 Indicators
3. Freedom of association and collective bargaining	1 Indicators
4. Child labour	1 Indicators
5. Forced and compulsory labour	1 Indicators
6. Security practices	1 Indicators
7. Indigenous rights	1 Indicators
C. Society Performance Indicators	
1. Community	1 Indicators
2. Corruption	3 Indicators
3. Public Policy	2 Indicators
4. Anti‑competitive behaviour	1 Indicators
5. Compliance	1 Indicators
D. Product Responsibility Performance Indicators	
1. Customer health and safety	2 Indicators
2. Product and service labelling	3 Indicators
3. Marketing communications	2 Indicators
4. Customer privacy	1 Indicators
5. Compliance	1 Indicators

Source: Global Reporting Initiative (2006) Sustainability Reporting Guidelines

As illustrated in Table 3.3 above, the three core domains of GRI framework also are the contemporary economic, social, and environmental responsibilities. Besides, some industry sectors encountering requirements that need specific guidance as well as the commonly applicable basic guidelines, such as the mining and oil sectors, have constructed sector supplements reacting to these issues (Li & Toppinen, 2011).

The GRI framework delivers guidance on how organisations could report their sustainability information with guidelines, sector supplements, a detailed list of performance metrics, protocols, and other items (Toppinen et al., 2012). Particularly, there are three kinds of consistent disclosure elements covered by the GRI. First, profile and strategy, which arrange for a high-level strategic vision for the business's approach to sustainability. Second, the approach of management, which offers brief disclosures of a company's particular approach to its economic, social, and environmental responsibilities. Third, 79 certain indicators, which measure organisation's responsibilities, among them 33 indicators related to CED categories and items that will be the focus of the current study (GRI, 2006). The nature of CED practices will be covered in the next section.

3.2.4 The Nature of CED

Previous literature has classified CED regarding its nature into two key types which are the voluntary and mandatory disclosures. Voluntary environmental disclosure is accepted by corporations with less external pressures to achieve certain purposes such as attracting new investors or other interested groups and securing society's approval (Akhtaruddin, 2005). Currently, CED practices are considered to be a voluntary rather than mandatory kind of disclosure (Villiers & Staden, 2011). This matter raises some questions related to what motivates a company to disclose such information about its environmental performance to the public, while companies might encounter some reputational risks and unnecessary costs that related to litigation based on the negative effects of their activities on the environment. There are many examples of voluntary CED such as the annual environmental statement issued under the Eco-Management and Audit Scheme (EMAS), and any environmental information a company voluntarily makes available to the public (Akhtaruddin, 2005).

On the other hand, the mandatory environmental disclosure is carried out due to accounting standards requirements further to the relevant laws and regulations (Akhtaruddin, 2005), that push firms to disclose their environmental information to the users of annual reports (Berthelot & Cormier, 2003). For example, the Securities and Exchange Commission (SEC) asked the listed firms to provide enough information about firms' environmental activities for its stakeholders in the US (Beets & Souther, 1999). The literature has reported that in developing countries, including MENA countries, the level of environmental legislation and regulation is still low compared to developed countries and also, this legislation and regulation have little or

no direct implications for CED practices (Belal, 2001; Ahmad, 2004; Eljayash et al., 2012). This means that environmental disclosure is still regarded a voluntary type of disclosure related to a company self-choice and indirect external pressures.

Although companies have been motivated to disclose their environmental information by a raft of regulations, practically the entire environmental obligation is still unclear (Cho & Patten, 2007). Also, there are some examples for the mandatory CED such as the Toxic Release Inventory (Medley) in the US, the Pollutant Release and Transfers (PRTR) in some European countries, such as the UK (Ishwerf, 2012).

The following section discusses the theoretical underpinning of CED practices using an institutional conceptual framework. First, it justifies the selection of institutional theory to interpret CED practices in the Arab MENA region. This section then highlights a historical background of institutional theory. Finally, it discusses using the pressures of isomorphism (i.e., mimetic, coercive and normative) to interpret CED practices in the region.

3.3 The Theoretical Underpinning of CED Practices

This section discusses the selection of institutional theory to frame the hypotheses and to interpret the results of the empirical analysis. This section aims to achieve three primary objectives. First, it discusses the commonly used theory to explain the variations in CED practices such as agency theory, legitimacy theory, stakeholder's theory, and signalling theory and then it demonstrates the reasons behind the selection of institutional theory over these theories. Second, it highlights a historical background of the emergence of institutional theory. Third, this section explains CED practices according to previous literature employing the three pressures of isomorphism namely mimetic, coercive and normative.

3.3.1 Traditional Theoretical Foundations of CED Practices

This sub-section discusses the commonly used theory to explain the variations in CED practices such as agency theory, legitimacy theory, stakeholder's theory, and signalling theory and then it demonstrates the reasons behind the selection of institutional theory over these theories.

3.3.1.1 Agency Theory

Agency theory proposes that the owners of a company (the principal) mandate the management of the company to the managers (the agent). The agency relation that results from the separation between the management and the ownership might make a conflict of interest between the

agent and the principals. This type of conflicts may lead to an agency problem, particularly when managers tend to achieve their own interests by making decisions might sometimes be harmful to the interests of shareholders. Therefore, this association can lead to a problem of information asymmetry attributable to the fact that shareholders have less access than managers (Jensen & Meckling, 1976).

The agency problems could be alleviated by contractual agreements that help to make the interests of managers aligned with shareholders' interests (Healy & Palepu, 2001). Voluntary disclosure is considered to be another means of alleviating the problems of agency, whereby managers reveal more voluntary information, such as environmental information, in order to reduce the costs of agency problems (Barako et al., 2006). Also, the voluntary disclosure of environmental information could be employed by managers to convince the stakeholders that managers are operating in an ideal way (Watson et al., 2002). Additionally, regulations (e.g., social and environmental regulations) are considered to be effective means of addressing the agency cost as they ask managers to comprehensively disclose voluntary information such as environmental information (Healy & Palepu, 2001). Though, the comprehensive disclosure is never assured, even with the presence of regulations (Barako et al., 2006). The non-existence of full voluntary disclosure seems to be associated with the conflict of interests between shareholders and managers (Lev, 1992). Besides, the regulations of the corporate disclosure are intended to offer the minimum quality and quantity of information to investors that comfort in the process of decision-making (Healy & Palepu, 2001).

In brief, an agency problem happens because of differences in the goals of both shareholders and managers. The shareholders want to persuade the managers to perform in line with their interests responsibly, yet the owners do not have proper information about the environmental and social behaviour of those managers. Managers, nevertheless, prioritise their own interests, even if there is a conflict with the interests of shareholders. According to agency theory, the voluntary disclosure of environmental information by companies' managers could be regarded as an effective means to alleviate agency problems.

3.3.1.2 Legitimacy Theory

Legitimacy theory suggests that companies continually aim to confirm that they act within the norms and bounds of their respective communities. These norms and bounds change across time, thus requiring the companies to be responsive (Brown & Deegan, 1998). In this context, Shocker and Sethi (1974: 67) state:

'In a dynamic society, neither the sources of institutional power nor the needs for its services are permanent. Therefore, an institution must constantly meet the twin tests of legitimacy and relevance by demonstrating that society requires its services and that the groups benefiting from its rewards have society's approval.'

As mentioned in Deegan and Rankin (1996: 54), if a company cannot explain its continued activities, then in a sense the community might revoke its '*social contract*' to continue its activities. This can occur through eliminating the demand for the business products or consumers reducing, factor suppliers eliminating the supply of financial capital and labour to the company, or penalties or laws to forbid those operations which do not meet the expectations of the society (Brown & Deegan, 1998).

A number of previous studies have recognised specific kinds of social and environmental responsibility disclosures that have existed within corporate annual reports and which have been interpreted as being part of strategies' portfolio carried out by companies' managers and accountants to bring legitimacy to their respective operations (Deegan and Rankin, 1996).

Hogner (1982) in a study sought to link legitimacy theory to corporate social and environmental disclosure policies argued that environmental disclosures are representative of community's expectations regarding corporate behaviour. The results of the study indicate that variations in social and environmental disclosures were associated with variations in societal expectations of corporate environmental behaviour. In an attempt to interpret systematic variations in CED policies in annual report employing legitimacy theory, Deegan & Rankin (1996) concluded that Australian firms have significantly increased disclosing their environmental information in annual reports in line with a legitimation motivation in an effort to redirect attention away from other possibly damaging news.

Therefore, evidence proves that the management understands that it should act within the restrictions and expectations of community and that it will respond to perceived reforms in social perceptions about its activities, with such response frequently taking variabilities form in the environmental disclosure made within corporate annual report in order to maintain the legitimacy of its operations (Deegan & Rankin, 1996).

3.3.1.3 Stakeholder Theory

Freeman (1984) defines stakeholders as "*any group or individual who can affect or is affected by the achievement of the firm's objectives*". Stakeholders of the company consist of creditors, governmental bodies, customers, employees, suppliers, and non-governmental organisation.

Ansoff (1965) is the first user of the term "*stakeholder theory*" in describing the objectives of the organisation. A key objective of the corporation is to achieve the ability to balance the conflicting requirements of different stakeholders. Freeman (1983) divided the development of the concept of stakeholder into business policy and corporate planning model and a CSR model of stakeholder management. The model of business policy and corporate planning of the stakeholder concept concentrates on evaluating and developing the acceptance of the strategic decisions through groups whose approval and support are needed for the existence of the firm (Roberts, 1992). The behaviour of different stakeholders is regarded a restriction on the strategy that is established by management to make corporate resources consistent with its environment (Roberts, 1992).

The model of corporate social and environmental responsibility of stakeholder analysis expands the model of corporate planning to involve external pressures on the company that might undertake adversarial positions (Ullmann, 1985). The adversarial parties are categorised as special interest or regulatory groups paying attention to social issues. The model of corporate social and environmental responsibility permits a strategic planning model to be familiarised with changes in the social requirements of non-traditional power groups (Roberts, 1992). Freeman (1983) argues that the dynamics of stakeholder effects on corporate decisions are related to social and environmental issues. A main role of management is to evaluate the importance of meeting the demands of stakeholder to attain the strategic objectives of the organisation where the increase of the level of stakeholder power leads to increase the significance of meeting stakeholder requirements. Ullmann (1985) advanced a conceptual model of corporate social and environmental responsibility activities which provides a conceptual foundation for investigating CSR activities in a stakeholder theoretical framework. Ullmann (1985) determined that stakeholder theory offers a proper justification for integrating strategic decision-making process into CSR activities.

3.3.1.4 Signalling Theory

Signalling theory suggests that companies use CSR disclosure as a functional signal of their higher commitment to CSR regulations and laws (Clarkson et al., 2008). This means that companies are voluntarily reporting environmental information to signal their genuine superior position concerning CSR practices (Frias-Aceituno, Rodríguez-Ariza & Garcia-Sánchez, 2014). Accordingly, firms disclose their environmental performance to make sure that stakeholders are aware of the environmentally accountable behaviour of those companies

(Clarkson et al., 2011). In this regard, Baiman and Verrecchia (1996) argued that signalling theory assume that CED is a signal transferred to the market to decrease information asymmetries, increase firm value, and optimise financing costs.

Although CED is costly, ''*good*'' companies will benefit from making their ''*good*'' performance perceived by stakeholders in order to outweigh the related costs (Li et al., 1997). Prado-Lorenzo and Garcia-Sanchez (2010) argue that corporations with the greater CSR performance will attempt to gain a competitive advantage by voluntarily disclosing relevant social and environmental information in their annual reports. Accordingly, businesses with inferior environmental performance might avoid disseminating their environmental information that could harmfully influence their reputations (Prado-Lorenzo and Garcia-Sanchez, 2010). For example, Nike issued CSR reports that involved false claims concerning labour practices of its sub-contractors in developing countries. When these claims were then proven to be false, stockholders took legal reaction against Nike, which was later compromised when Nike decided to pay $1.5 million to a labour standards organisation (Murray, 2005). This example demonstrates how stakeholders are eager to punish false social and environmental disclosures. The signalling argument proposes that companies with superior CSR performances could experience lower costs when disclosing CSR information than other companies with poorer CSR performances (Mahoney, Thorne, Cecil & LaGore, 2013).

On the basis of the arguments mentioned above, the reasons behind the selection of institutional theory in this study to interpret CED practices over other theories are as follows. Firstly, consistent with previous studies, institutional theory is increasingly being applied to study accounting practices, including CED, in organisations (Ali & Rizwan, 2013; Amran & Devi, 2008; Dillard & Rigsby, 2004; Hopwood & Miller, 1994; Marquis, Glynn, & Davis, 2007; Villiers & Staden, 2011).

Secondly, institutional theory could be employed to explain CED practices from different behaviours, norms, contexts, beliefs, and procedures used by companies to acquire their legitimacy (DiMaggio & Powell, 1983; Deegan & Jeffry 2006). Notably, institutional theory can provide a more comprehensive interpretation of CED practices than other theories such as agency theory which focuses on the internal factors (Gray et al., 1995; Tinker & Okcabol, 1991). Although agency theory includes the internal elements that called "*management attitude and behaviour*" to reflect the conduct of self-interest and *wealth maximisation*, it discounts the external elements which are social, political and economic contexts that have significant

insights could be employed to interpret CED practices in a given context. On the other side, institutional theory focuses on internal and external institutional environments within the context of organisations (Meyer & Rowan, 1977). Furthermore, other theories such as stakeholder theory may not give enough explanations of CED practices, because it sees the world from the *perspective of management* (Gray et al., 1995) rather than the institutional environment of a country (Buzied, 1998; Deegan, 2002), where it interprets CED to be a result of stakeholder pressures who matter the most to the management (Gray et al., 1996).

Thirdly, institutional theory has been used to understand the differences between the implementation of firm's disclosure practices in both developed and developing economies (Peng, Wang, & Jiang, 2008). Particularly, institutional theory provides better explanations to CED practices in developing countries (e.g. MENA region countries) than other theories (e.g. legitimacy theory) which mainly applied in Western developed countries. Debatably, legitimacy theory might not provide enough understanding of CED practices in a different political, economic and social setting (Deegan et al., 2002; Gray et al., 1995b), as it has been derived from the bourgeois political economy theory that emerged in western culture and context. This means that the differences in socio-cultural settings between developed and developing economies have a considerable impact on CED practices as a voluntary type of accounting disclosure (Belal, 2001; Gray et al., 1995a).

Additionally, institutional theory provides an excellent basis for an interpretation of radical changes adopted by organisations to enhance their survival prospects within a given society (Chizema & Buck, 2006; Dacin, Goodstein, & Scott, 2002; Dougherty & Heller, 1994; Greenwood & Hinings, 1996). Given that, several Arab MENA countries have witnessed radical political and economic changes caused by what is known as "the *Arab Spring*" which affected institutional choices at both national and regional levels, institutional theory could provide comprehensive explanations related to country-specific pressures and region-specific pressures which could have an impact on firm choices regarding CED practices in a region underwent radical political and economic changes such as the Arab MENA region.

The next sub-section highlights a historical background of institutional theory.

3.3.2 The Historical Background of Institutional Theory

The institutional perspective is regarded one of the most dominant perceptions of management and organisation theory (Greenwood, Oliver, Suddaby, & Sahlin, 2008). It emerged in the

1970s and early 1980s by innovative scholars who started by questioning why organisations are more likely to be similar or dissimilar to each other (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Zucker, 1977). Those theorists have spawned what is commonly cited as *New-Institutionalism* with its focus on specific themes such as, fields, legitimacy, institutional work, institutional entrepreneurship, isomorphism and institutional logics (Greenwood & Hinings, 1996). The old institutionalism, furthermore, has concentrated on other issues such as power and influence, competing values, informal structures and coalitions (Greenwood & Hinings, 1996; Selznick, 1949, 1957).

The historical background of institutional theory traced back to the1960s and 1970s when organisation theorists had been concerned with developing an understanding of *Weber's* conceptualisation of bureaucracy (Etzioni, 1964; Perrow, 1970). In that period, sociologists such as Albrow (1970); Etzioni (1964); Mouzelis (1968); Perrow (1970) had focused on bureaucracy spreading in modern communities further to the explanation of the reasons and implications underlying the rationalisation process. This concentration was explicitly elevated in Meyer & Rowan (1977) and DiMaggio & Powell (1983). In this context, organisation scholars such as Pugh et al. (1969) and Child (1972) had debated whether bureaucracy concept of Weber was suitable for different situations and circumstances. This questioning has led to what is known as "*Contingency Theory*" which is regarded an earlier step of the concentration on the institutional perspectives (Child, 1972; Lawrence & Lorsch, 1967). Debatably, contingency theory identifies elements (e.g. the size of the organisation, uncertainty, complexity and its technology) that which constrain the nature of archetypal bureaucratic form (Donaldson, 2001).

The common purpose of these primary sociological and organisational approaches was to realise how collective objectives could be attained by organisation processes and structures (Greenwood, Hinings, & Whetten, 2014). This point emphasises several expressions such as management systems; organisation structure and organisation design (Burns & Stalker, 1966; Pugh, Hickson, & Hinings, 1963). The main argument in this sense was that these early studies sought to realise the organisation as a whole entity appreciating how the collective effort can be achieved, and collective aims accomplished (Meyer, Allen, & Smith, 1993). Contingency researchers also sought to understand how organisations were coordinated and managed, and those scholars discounted looking at particular structures and/or isolated practices adoption, but then again they looked at an organisation as a whole entity (Greenwood et al., 2014).

Institutional theory, at its early stage, did not focus on this trend, but its influential initial insight was arguing that the organisational design was sophisticated regarding responding to such technical contingencies. Despite this, Greenwood et al. (2014) assert that the organisation is embedded in its institutional context regarding beliefs and socio-cultural ideas that suggest adopting proper changes and activities to be socially legitimate and acceptable. **"Philip Selznick"**, the father of institutional theory, had emphasised how organisations had been influenced by the institutional processes (Selznick, 1957).

These first institutional insights were followed by scholarship implicitly acknowledged the necessity to be aware of how the organisation, taken as a whole entity, is formed by institutional prescriptions (Greenwood et al., 2008). However, for the reason that the idea of cultural prescriptions has influences upon organisations was so unusual, most initial institutional studies sought to confirm this idea through viewing the diffusion pattern of specific practices and then inferring the role of institutional procedures from that pattern (Greenwood et al., 2014).

Thus, the inventive inquiry of earlier institutional studies that concentrated on understanding the organisation as a social instrument for reaching collective ends becomes fairly neglected (Meyer, Egger-peitler, & Höllerer, 2014). Afterwards, institutional theory has grown to be considered as a powerful and popular theory can provide such explanations for both organisational and individual actions (Dacin et al., 2002). Also, Scott (2001) stated that much of the concentration regarding the literature of institutional theory was directed towards convergent change and institutional construction. Notably, institutional theory has been devoted too much to analyse macro forms of diffusion trajectories (Zilber, 2002, 2006). Regarding the institutional analysis, recent studies (Hardy & Maguire, 2008; Thornton, Ocasio, & Lounsbury, 2012; Zietsma & Lawrence, 2010) focused on institutional processes and institutions which become a dominant aspect instead of explaining the collective organisational effort.

Collectively, institutional theory has been driven by the idea of why different organisations operating in various environments are more likely to be similar or dissimilar to each other regarding their structure (Tolbert & Zucker, 1994). Institutional theory, furthermore, illustrates how the behaviour of organisations responses to the institutional pressures (e.g. social expectations and the actions of leading organisations) further to the pressures of market and competition (Chizema & Buck, 2006).

After that, the *Neo-Institutional Theory* was suggested by Scott (2001) that places considerable concentration on three different points of analysis: actors; societal (global) institutions and governance structures. However, both the institutional and neo-institutional frameworks emphasise that a company seek to incorporate norms from its institutional environment to gain the needed legitimacy, resources, stability and to enhance its survival prospects within a given context (Chizema & Buck, 2006). While institutional theory is primarily silent on why some companies approve radical changes regardless of facing similar institutional pressures (Greenwood & Hinings, 1996), neo-institutional theory suggests that organisational responses to certain radical changes would be identified by their embeddedness nature within organisational and societal contexts (Ahmadjian & Robbins, 2005). Arguably, institutional theory emphasises the adoption of radical changes by an organisation. However, neo-institutional theory focuses on the socio-cultural motives underlying behind the approval of those changes (Chizema & Buck, 2006). Particularly, neo-institutional theory concentrates on aspects associated with the cultural reasoning of an institution (Scott, 2001).

Those organisational behaviours are potentially explained through the three pressures of isomorphism which related to the institutional expectations and pressures (Buchko, 1994). Institutional theory, moreover, is not always considered as an organisational change. Nevertheless, it could be seen as an explanation of stability in organisational arrangements and isomorphism (uniformity) in a given context (Greenwood & Hinings, 1996). In this regard, each organisation is embedded into two types of institutional environment namely (1) internal institutional environment which consists of the systems, structure and practices established in the past by a company and (2) external institutional environment which is represented in a common context with other businesses (Meyer & Rowan, 1977). As has been mentioned earlier in this chapter, institutional theory could provide better understanding of CED practices in a given context than agency theory with its limited focus on the internal organisational environment (Gray et al., 1995a; Tinker & Okcabol, 1991) as well as stakeholder theory which sees the world from administration perspective.

Recent work in institutional theory has started to substantially concentrate on interpreting institutional process and institutions rather than explaining how organisations work (Greenwood et al., 2014). Furthermore, institutional theory assumes that the right direction to understand organisations is highlighting their similarities (Meyer et al., 2014). The next section discusses using isomorphism to interpret CED practices, particularly in the context of the Arab MENA region.

3.3.3 Using Isomorphism to Explain CED Practices

The isomorphic pressures are employed to explain how certain factors could affect CED practices in the Arab MENA emerging markets. The main idea of isomorphism is that organisations mimic each other to meet commonly established "*rationalised myths*", which are reflective of appropriate organisational practices as deemed by societal expectations or that which is deemed as legitimate organisational activities (Greenwood et al., 2008). Such rationalised myths are regarded as effective solutions for perceived organisational problems (Boxenbaum & Jonsson, 2008). When organisations follow these "*myths*", they will be considered more institutionalised and legitimate, where the way in which organisations can meet rationalised myths is by changing their organisational practices to meet external institutional pressures –i.e. isomorphism (Meyer & Rowan, 1977).

Early organisation theorists have indicated that organisations in the same industry are more likely to follow similar types of practices as "*efficiency-seeking*", where companies aim at achieving the ideal 'fit' with their counterparts in the same environment (Greenwood et al., 2014). Institutional researchers have emphasised that organisational processes and structures are more likely to become isomorphic with acceptable standards for organisations in a given context (Eisenhardt, 1988) due to legitimacy pressures, mainly, the environment could legitimise certain organising techniques over time (Tolbert & Zucker, 1994). As such, companies adopt such practices not only for technical pressures but also if they believed that community expects them to follow these practices, which leads to *institutional isomorphism* (Greenwood et al., 2014). This means that firms need a societal mandate or legitimacy to operate, and this could be acquired by conforming to societal prospects.

Isomorphic pressures are facilitated by procedures which indicate that the dissemination of practices arranges for organisational structure and ideas amongst businesses (Greenwood et al., 2014). The institutionalised ideas put more pressure on organisations to conform to similar forms and structures within a given community (DiMaggio & Powell, 1983). Particularly, it indicates that organisations which share the same context will come to have shared appearances over time (Greenwood et al., 2008).

An inclusive definition of isomorphism was offered by DiMaggio & Powell (1983, p 149) states it as:

> "A constraining processes that force one unit of population to resemble other units that face the same set of environmental conditions".

Isomorphism also refers to the adaptation of institutional practices by organisations (Dillard & Rigsby, 2004). Crucially, isomorphism has been classified into three kinds of institutional pressures namely mimetic, coercive and normative pressures (DiMaggio & Powell, 1983). Mimetic isomorphism (cognitive legitimacy) "*Companies benchmark*" indicates firms desire to imitate organisational practices of other businesses (DiMaggio & Powell, 1983). Concerning coercive isomorphism, (regulative legitimacy) it emerges due to both formal and informal pressures that employed by companies on other dependent companies as well as by community's cultural prospects within which firms function, these pressures could be felt as force, convincing, and invitation to be involved in collusion (DiMaggio & Powell, 1983). Furthermore, coercive pressure relates to various sources of societal expectations, governmental regulations and legislation (DiMaggio & Powell, 1983). For instance, coercive employment equity laws have made companies change their structure and later their practices even if companies were quite persuasive in understanding what it meant to comply (Edelman, 1992).

Additionally, normative isomorphism (normative legitimacy) existed because of the professionalism which indicates professionals' expectation to comply with such principles or standards and to adopt certain institutional practices (DiMaggio & Powell, 1983). Notably, normative power could be derived from regulatory authority power that related to what is known as "*the arrangements of organisational structures*" (Villiers & Alexander, 2010). Normative pressures for professionalism are potentially created by two important sources which are education and professional networks (Amran & Devi, 2008).

Mimetic pressures have received the most devotion to research among the three isomorphic pressures, (Mizruchi & Fein, 1999). This emphasis on mimetic pressures is probably associated with difficulties in studying coercive and normative pressures using quantitative methods, while mimesis was easier to be explored applying these methods (Greenwood et al., 2014). Moreover, cognitive legitimacy seeking behaviour was described as isomorphism; therefore, companies, in order to legitimise their activities, tend to meet community's expectations regarding certain institutional practices (DiMaggio & Powell, 1983).

Recently, institutional theory has been employed to explain CED practices in the different contexts of both developed and developing countries (Ali & Rizwan, 2013; Amran & Devi, 2008; Marquis et al., 2007). As such, institutional theory regarded as a dominant theoretical perspective within the organisation theorists is also progressively being applied to study

accounting practices in organisations (e.g. CED practices) (Dillard & Rigsby, 2004; Eltkhtash, 2013). Also, accounting disclosure practices could not be independently presented from the perspective of institutional pressures regarding the interaction between companies and the institutional environment (Hopwood & Miller, 1994). Institutional theory could also provide comprehensive explanations of accounting disclosure practices including CED from different behaviours, norms, contexts, beliefs, and procedures that adopted by companies to acquire their resources and legitimacy within their environment (Peng et al., 2008). Particularly, there is a significant relationship between company's disclosure and the requirement of institutional environment; as such, companies seek to fulfil these demands to be recognised as legitimate. Accordingly, CED should be analysed in its institutional environment, not in a static way, and thus institutional theory can provide such substantial justifications for the reasons underlying behind the adaptation of certain organisational practices within a specific organisational field (Deegan, 2009).

As mentioned before, Isomorphism indicates the process by which companies adopt organisational practices of others (Dillard et al., 2004). CED provided by a particular company is considered as an organisational practice and bringing the change into an organisation by adopting such CED practices represents the process of isomorphism that which affected by various institutional, professional and stakeholder pressures (Deegan, 2009; Marquis et al., 2007). Besides, firms' adoption of CED practices in the industry might also be influenced by societal expectations (Deegan, 2009). As such, the society will require a similar behaviour of adopting CED practices from other firms in the industry. This means that firms' avoidance of such institutional pressures might lead to a risky situation could threaten their legitimacy and survival prospects within a given community. Therefore, (follower) companies voluntarily adopt the best CED practices of other companies working in the same sector (Ali & Rizwan, 2013). For example, a company imitates other companies' operations when it does not find any guidance on CED, reflective of the influence of mimetic pressures (Amran & Devi, 2008).

Influential stakeholders also can play an important role to encourage companies to uphold such organisational practices (e.g. CED practices) as same as other businesses in the similar institutional environment, indicative of a coercive isomorphism (Amran & Devi, 2008; Tolbert & Zucker, 1983). Furthermore, ethical and cultural values can play a significant role in affecting professionals' expectations, who will finally embrace these institutional practices and adopting these practices could be associative of normative pressures (Deegan, 2009).

Altogether, companies are more likely to be socially accountable the more they face robust national regulation, great influence of NGOs, and normative institutional environment which persuades socially responsible behaviour (Campbell, 2007). A country's institutional regulations and norms apply a restraining effect on companies that work within its governance system (Linsley & Lawrence, 2007). Notably, a country's standards setters and accounting regulators will encourage, and maybe mandate, the disclosure of environmental information in annual reports which result in less variability or more similarity in CED practices within a given country, reflective of mimetic isomorphism (Abdallah, Hassan, & McClelland, 2015; Lopes & Rodrigues, 2007). These pressures and constraints come together to create similarity of action, structure and thought (isomorphism) within institutional environments (Solomon, Solomon, Norton & Joseph, 2000).

In brief, the mimetic isomorphism is represented in a company's responses to the status of uncertainty relating to the adoption of organisational practices by imitating another successful company in the industry. However, coercive isomorphism occurs when companies are adopting organisational practices by a more powerful authority such as the governmental regulation. On the other hand, the normative isomorphism is related to the promoted organisational practices by professional groups to be fulfilled by companies. These isomorphic pressures are responded by corporations to meet certain institutional pressures in order to be more acceptable as well as to legitimise their activities and to enhance their survival prospects within a given community.

Although prior literature employed various theoretical perspectives to interpret CED practices (Reverte, 2009), the vast majority of these studies seem to approve that institutional theory offers comprehensive interpretation and understanding of CED in both developed and developing countries (Ioannou & Serafeim, 2012; Reverte, 2009). Drawing on previous literature, an institutional perspective, particularly isomorphism pressures, will be employed to develop the hypotheses and to interpret the results of the present study.

The next section discusses the previous empirical research relating to CED practices in developed countries, developing countries and MENA countries. Throughout this section, the emerging empirical and theoretical gaps will be highlighted to be a key contribution to this study.

3.4 Empirical Research in CED

This section seeks to attain three main objectives. First, it aims to review the prior CED-related research that has been undertaken in both the developed and developing countries. This section

then reviews the earlier CED literature in MENA countries in order to identify the existing empirical gap that will be addressed in the current study. It finally discusses how the hypotheses of the present study could be developed according to previous empirical research and framed based on an institutional framework.

3.4.1 Corporate Environmental Disclosure in Developed and Developing Countries

Although environmental accounting has demanded increasing acceptance and attention, its improvement could be regarded as a result of academic advocacy as well as stakeholder pressures (Islam, 2009). Debatably, the few early studies throughout the 1970s and 1980s that have advocated CED research were considered as radical in terms of creating a real potential change in existing accounting practices and structures (Deegan et al., 2002; Tinker, Merino, & Neimark, 1982). Those initial advocates were either implicitly or explicitly critiquing the structure of accounting discipline relating to historical financial reports for creditors and shareholders (Mathews, 1997, p 488). Particularly, early CED research concentrated on providing evidence on social and environmental disclosure practices by the use of content analysis (Guthrie & Parker, 1989).

During the 1990s, CED research has progressively obtained prominence and improved considerably (Mathews, 1997). The period of the 1990s also experienced a growth in research focused on the reintroduction of the social eco-justice issues in addition to those of eco-efficiency (Owen, 2008).

An increasing amount of recent studies seems to have significantly contributed to the social and environmental accounting literature with recommendations for well-established additional research (Belal, Kabir, Cooper, & Dey, 2010; Campbell & Slack, 2011; Cho, Freedman, & Patten, 2012; C. Cho, Guidry, & Hageman, 2012; Cho & Patten, 2013; Cooper & Owen, 2007; Deegan & Blomquist, 2006; Deegan et al., 2002; Herbohn, 2005; Malarvizhi & Matta, 2016; Milne & Patten, 2002; O'Donovan, 2002; O'Dwyer, 2002, 2005a, 2005b; O'Dwyer & Owen, 2005; Peters & Romi, 2013). The growing engagement of both stakeholders and academics points out that CED-related issues have not decreased recently; rather they continue to be examined in efforts to determine and understand the motivations underlying behind such practices (Islam, 2009).

A significant amount of research has been devoted to addressing CED in developed countries, as the highest annual reports' disclosure of environmental information was recorded in the US, Australia, the UK and Germany (KPMG, 2002). This growing interest in environmental issues

by developed communities has contributed to an increase of CED practices resulting in the voluntary issuance of independent environmental reports (Mitchell & Hill, 2009). Disclosures of environmental information in annual reports were fairly low in the UK until the early 1990s, after which a sudden increase was noted (Brammer, Jackson, & Matten, 2012; Brammer & Pavelin, 2006; Brammer & Pavelin, 2006; Campbell & Beck, 2004). Recently, CED practices have received considerable attention among firms operating in the UK, and this increase was explained to be a result of improving community understanding towards the importance of environmental issues (Jizi, Salama, Dixon, & Stratling, 2014). In Ireland, CED practices were negatively reported in comparison with other Western European countries (O'Dwyer, 2002). Potentially, this was due to the lack of stakeholder pressures on firms to provide detailed information about their environmental performance. However, some large-sized Irish firms have started considering the improvement of comprehensive CED and the mechanisms of stakeholder engagement, where CED practices will instil stakeholder trust, hence increasing the loyalty of customers contributing to the long-term success of the sustainable business (O'Dwyer, Unerman, & Bradley, 2005; O'Dwyer, Unerman, & Hession, 2005).

The situation of CED was much better in the US (Aerts, Cormier, & Magnan, 2008), where annual report disclosures of environmental information were given more consideration by US firms compared to other countries. This trend of CED in the US could be associated with the significant role played by government and professional organisations to encourage firms to increase their CED practices by using different mediums (Hopwood, 2009; Sawani & Zain, 2010). In Australia, the disclosed amount of environmental information has witnessed a similar increase in firms' annual reports, mainly a consequence of the governmental regulations which promote the disclosure of environmental information in the annual reports (Lynch, 2010). The previous empirical evidence argues that CED in Australia could be considered as a tactic adopted by companies in order to legitimise their activities and to be more socially normative and acceptable (O'Donovan, 2002).

In Japan, adopting foreign CED guidelines has contributed towards improving firms' environmental disclosure with the lowest recorded CED level being reported in manufacturing firms (Stanwick & Stanwick, 2006). In Singapore, the level of CED practices was associated with human resources and the impact of socio-economic problems (Tsang, 1998). In Thailand, CED practices among different sectors have been briefly disclosed (Kuasirikun & Sherer, 2004). In Bangladesh, CED practices have increased after the environmental incident

"*blowout*" of Niko Resources firm in 2005 (Islam & Islam, 2011). This increase was related to the pressures of the public as measured by the non-positive coverage of the media to the blowout of Niko.

About the African context, the trend is towards increased CED practices amongst South African firms, although the level of CED is still less than their developed global counterparts (Villiers & Staden, 2011). In Nigeria, environmental disclosures are still considered to be at an early stage compared to other developed countries (Uwuigbe & Uadiale, 2011).

According to the arguments mentioned above, CED practices emerged in the 1960s within the context of industrialised economies, where firm's activities have substantial impacts on the surrounding environment. Over time, CED has improved in developed countries which have influenced less developed and developing communities to produce more information about their environmental performance through multinational companies and international trade agreements. Although CED has improved in both developed and developing countries, it is still regarded to be at an early stage in developing countries.

In the following subsection, the previous CED-related studies that have been undertaken in the context of MENA region will be discussed in order to identify the empirical gap in the literature.

3.4.2 Corporate Environmental Disclosure in the MENA Region

In the MENA region, the environmental reporting is not yet the main concern of firms operating in the region (Abu-Baker & Naser, 2000). This is further substantiated by evidence obtained by O'Connor (2006) who conducted a Meta review regarding CED based on world regions which showed that CED provided by MENA region was the lowest in the world (see Figure 3.1).

Figure 3.1: CED based on Global Regions (Meta review)
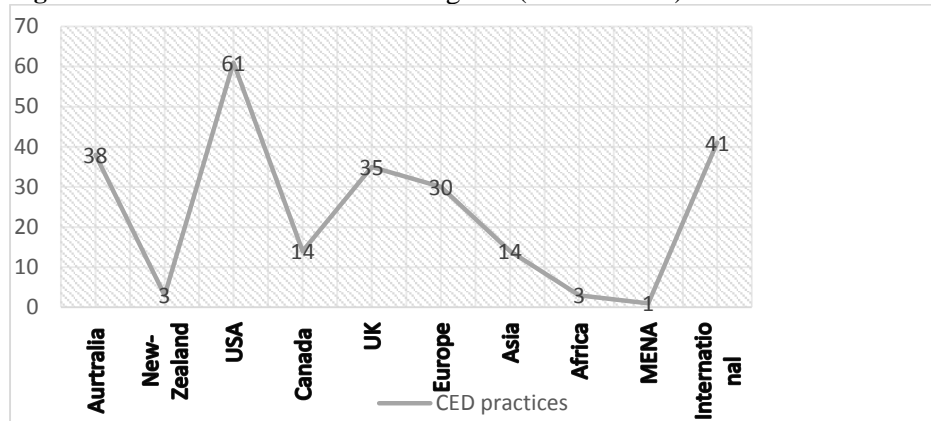
Source: O'Connor (2006, p 16).

Although the amount of research on CED in developing countries has been growing, there is only one multi-country study of CED in the Arab MENA region recorded in Panel A of Table 3.4 below. Eljayash et al. (2012) seek to examine environmental disclosure in ten Middle Eastern Arab oil exporting countries. Findings of the study indicate variations in CED between the sampled countries, but generally, it is still low compared with their developed counterparts. However, their study was limited to oil and gas companies and considered only sixteen environmental disclosure items, which is less than ideal.

The one single-country study of CED – shown in Panel B of Table 3.4 – was similarly focused on the oil and gas sector and considered only five disclosure items (Al-Drugi & Abdo, 2012). The trend in CED indicates a steadily increasing in mean value throughout the study. Although the oil and gas sector is important in the region, it is by no means the only sphere of corporate economic activity that affects the environment. There is, therefore, a need for a study that goes beyond just the oil and gas sector, preferably using a comprehensive set of CED disclosure items.

Table 3.4: Studies of CED in Annual Reports in the Arab MENA Region

Country/ies	Author(s)	No. firms	Observations	Sector(s)	Study period	CED items	Method of quantifying the content
Panel A: Multi-country CED studies							
APEC[a]	Eljayash et al. (2012)	58	174	Oil and Gas sector	2008-2010	16	Unweighted index
Panel B: Single-country CED studies							
Libya	Al-Drugi & Abdo (2012)	43	344	Oil and gas sector	2002-2009	5	Number of words
Panel C: Multi-country CSD studies							
Middle East[b]	Kamla (2007)	68	68	Multi-sectors	2000	23	Unweighted index
Panel D: Single-country CSD studies							
Jordan	Abu-Baker & Naser (2000)	143	286	Industry and Banking sectors	1996-1997	15	Weighted index
Jordan	Al-Khadash (2003)	46	138	Industry sector	1998-2000	4	Number of words
Egypt	Hanafi (2006)	82	279	Multi-sectors	1998-2000	8	Unweighted index
Qatar	Naser et al. (2006)	21	42	Industrial, service and financial sectors	1999-2000	15	Unweighted index
Egypt	Rizk et al. (2008)	60	60	Industry sector	2002	4	Number of words and sentences
Jordan	Ismail & Ibrahim (2008)	60	60	Manufacturing and Services sectors	2006	4	Number of words
Saudi Arabia	Al-Gamrh (2010)	93	93	Non-financial sector	2008	25	Unweighted index
Egypt	Hussainey et al. (2011)	111	555	Listed firms	2005-2010	4	Number of statements
Tunisia	Gana & Dakhlaoui (2011)	36	180	Financial and Non-financial sectors	2001-2005	11	Weighted index
Morocco	Amine et al. (2013)[c]	8	41	Banking sector	2012	9	Number of words and phrases
UAE	Naser & Hassan (2013)	60	60	Non-financial sector	2011	26	Unweighted index
Kuwait	Al-Ajmi et al. (2015)	82	82	Industry and service sectors	2012	15	Unweighted index
Libya	Elmogla et al. (2015)	54	270	Public and private sectors	2001-2005	7	Number of words and sentences
Morocco	Khlif et al. (2015)	14	84	Non-financial sectors	2004-2009	21	Unweighted index
Saudi Arabia	Habbash (2016)	53	267	Non-financial sector	2007-2011	17	Unweighted content analysis

Although only two previous studies focused exclusively on CED in the region have been discovered, other studies of corporate social disclosure (CSD) have been published which have included environmental disclosure items and so are of relevance to the current study. Panel C of Table 3.4 contains one multi-country study of CSD in the region (Kamla, 2007), while Panel D lists fifteen other, single-country published CSD studies. The picture that emerges from Kamla's study is that, although there are differences between countries, the overall level of CSD, including CED (*OR* especially CED), is quite low compared to the levels typically found in developed countries.

A similar picture has emerged from single-country studies (e.g. Abu Baker & Nasser, 2000; Al-Khadash, 2003 (Jordan); Tolba & Saad, 2006; Naser et al., 2006 (Qatar); Ahmad, 2014 (Libya)), with one possible explanation being the insignificant influence and enthusiasm for CED of professional accountancy bodies and accounting professionals (Abdelsalam & Weetman, 2007; Kamla, 2007; Janadi et al., 2012).

However, although the level of CED in Jordan appeared to fall from 2000 to 2006 (Al-Khadash, 2003; Ismail & Ibrahim 2008), which suggests that growth in disclosure is not inevitable, recent studies have generally indicated an increasing level of CED in the MENA region, albeit at different rates and from different bases, depending on the country concerned. Increases have been seen in Saudi Arabia (Al-Gamrh, 2010; Habbash, 2016) and Tunisia (Gana & Dakhlaoui, 2011), for example. Various explanations have been proposed, including increased awareness of environmental responsibility among firm decision makers (Islam, 2011), collective stakeholder pressures (Gana & Dakhlaoui, 2011), enactment of new environmental responsibility legislation (Bayoud et al., 2012), the lack of an efficient stock market and the absence of an accountancy profession (Elmogla et al., 2015), and a desire to attract foreign direct investment (Ahmad, 2014; Hossain & Hammami, 2009; Hussainey et al., 2011), especially after the global financial crisis (Janadi et al., 2012).

Differences are also evident on a sectoral basis across the region, with industrial firms reporting environmental information more than firms operating in less environmentally sensitive sectors in both Egypt and Tunisia (Belhaj & Damak-Ayadi, 2011; Hussainey et al., 2011); though contrary to this, such differences were not identified in relation to financial and non-financial companies in Qatar (Naser et al., 2006).

Since there are many facets to the relationship between a firm and the natural environment, the overall level of CED can comprise many different elements. Differences can perhaps be

discerned between different countries – though since most studies are confined to data obtained from a single country and use only a limited and varying range of environmental disclosure items, such differences are to some extent a matter of conjecture. However, there is some suggestion that, while Jordanian firms measure and report on environmental expenditure and pollution abatement (Al-Khadash, 2003; Ismail & Ibrahim, 2008), Egyptian firms measure and disclose environmental policy and audit categories (Hanafi, 2006; Rizk et al., 2008). Moreover, environmental pollution and environmental energy categories were the most disclosed items in firms' annual reports in UAE (Jahamani, 2003).

In conclusion, there are signs of researchers' interest in CED in the Arab MENA region, but as yet the coverage is patchy. Most studies are focused on a single country, with environmental disclosure items often relatively few in number and usually subsumed within a broader CSD study. The only multi-country study of CED (El-Jayash et al., 2012) focused exclusively on the oil and gas sector and used just sixteen environmental disclosure items. While some CSD studies examined environmental disclosure items more than this (e.g. Naser & Hassan (2013) used 25 in their study of UAE), the overall average of the studies listed in Table 3.4 (p75) is just 12.7 items, suggesting that coverage of environmental issues has tended to be limited to date. It is also difficult to compare studies. The importance of environmental issues in the region and some signs of increasing environmental disclosure, albeit from a low base, reinforce the need for further research.

The first aim of the current study is therefore to provide a more comprehensive, multi-country analysis of CED in the Arab MENA region, in order to document current practice, highlight recent trends and identify patterns across firms, industry sectors and countries. By identifying CED levels, trends, and patterns across nine MENA countries, using a 55-item disclosure index, and utilising data gathered across multiple sectors and covering a five-year period from 2010 to 2014, this study aims to resolve some of the apparent empirical gaps identified in existing studies conducted in the region. The second aim of this study is to explain the expected variability in CED practices across the region using multi-level explanatory variables (firm-level characteristics, country-level determinants, and region-specific pressures).

The following section discusses and concludes the most important previous causal analysis of the variability of CED practices in developed, developing and MENA countries.

3.5 Previous Causal Analysis of the Variability in CED Practices

With regards to the causal explanations of the variability in CED, a substantial amount of studies have examined the association between CED and firm-level characteristics such as firm size, profitability, leverage, firm financial performance and/or firm value (e.g., Alarussi, Hanefah, & Selamat, 2009; Cormier & Magnan, 2002; Jaggi & Freedman, 1982), sector type and audit type (e.g., Alanezi, 2009; Ghazali, 2007; Haniffa & Cooke, 2002; Thompson & Zakaria, 2004), corporate governace (e.g., Ntim, 2016; Ntim & Soobaroyen, 2013; Jamali et al., 2008) and earnings management (Muttakin, Khan & Azim, 2015; Prior, Surroca & Tribó, 2008; Sun, Salama, Hussainey & Habbash, 2010).

However, few studies have investigated country-level determinants of social and environmental performance and disclosure (see Table 3.5). Panel A of Table 3.5 summarises the only two studies, to the best of researcher's knowledge, that examined the association between CLG quality and social and environmental disclosures (i.e., Baldini et al., 2016; Ioannou & Serafeim, 2012). These studies have concentrated on understanding why companies embedded in different country-level institutions significantly show various disclosure practices. Also, they argued that significant cross-country variabilities in social and environmental disclosures might be attributable to idiosyncratic institutional, political, and cultural elements. These multi-country studies that undertaken in the context of developed countries concluded that the effect of CLG on social and environmental disclosure is heterogeneous in that they might have either reduced or enhanced the level of CED practices in a given society (Baldini et al., 2016).

Panel B of Table 3.5 presents the studies that investigated how CLG could influence voluntary disclosure practices generally such as corporate governance disclosure (Enikolopov et al., 2014; Essen et al., 2013), risk disclosure (Elamer et al., 2017), and corporate anti-corruption disclosure (Blanc et al., 2017). These studies concluded that voluntary corporate disclosure is likely to be higher in countries with higher CLG quality.

Thus, the investigation of the impact of country-level governance factors upon CED is a relatively new area of study in this regard (Sotorrío & Sánchez, 2008). The current study builds on previous literature (See Table 3.5) and debates that the cross-sectional variability in CED practices might be attributed to differences in country-level governance factors. The concentration on CLG is based on previous research on the varieties of capitalism theory (Hall & Soskice, 2001), which presented that country-level governance indicators could result in

relative institutional benefits for those businesses that work within various countries (Jackson & Apostolakou, 2010). As yet, only a small number of studies have theoretically and empirically examined how CLG can explain the variability in voluntary corporate disclosure across countries (see Table 3.5). Likewise, the investigation of the impact of CLG on CED in the Arab MENA region is of importance stemming from the environmental challenges that face the region, coupled together with the fact that environmentally sensitive sectors act as major contributors to MENA economies (World Bank, 2015).

Table 3.5: Previous Studies that Investigated the Relationship between CLG and Corporate Disclosure

Study	Aims of Study	CLG Indicators	Results
Panel A: CED and Country-level Governance Studies			
Baldini, Maso, Liberatore, Mazzi & Terzani (2016)	This multi-country study examines firm-level and country-level determinants of corporate environmental, social and governance disclosure employing a multi-theoretical framework.	Legal framework and corruption	The results indicate that the influence of country-level governance indicators on ESG disclosure is heterogeneous in that they might either encouraged or discouraged the level of ESG disclosure.
Ioannou & Serafeim (2012)	This study investigates the effect of CLG on corporate social performance.	Political stability, the role of low, and control of corruption.	The results indicate that the political system including political stability, the role of law and control of corruption are the most significant CLG indicators affecting CSP.
Panel B: Corporate Voluntary Disclosure and Country-level Governance Studies			
Enikolopov, Petrova & Stepanov (2014)	This study demonstrates that country-level and firm-level governance institutions may become complements during a crisis.	Government effectiveness and the rule of law	The findings suggest that the deterioration in corporate value during the financial crisis of 2007–2009 was more associated with firm-level disclosure in states with stronger CLG.
Lensink, Meesters & Naaborg (2008)	This paper examines whether foreign banks efficiency relies upon the quality of CLG and on institutional differences between the host and home country.	Voice and Accountability, Political stability, government effectiveness, regulatory quality and control of corruption.	The findings conclude that foreign ownership is negatively related to bank efficiency. However, in countries with good CLG quality, this negative impact is less pronounced. The results also suggest higher similarity in institutional quality between host and the home country could enhance foreign bank efficiency.
Essen, Engelen & Carney (2013)	This study examines the effects of corporate- level governance and country-level governance on firm performance before and during the financial crisis.	Role of law and control of corruption.	During the financial crisis, the results conclude that the general quality of CLG is positively related to firm performance.
Elamer, Ntim & Abdou (2017)	The study examines whether CLG could moderate the association between Islamic governance quality and risk management disclosure.	Voice and accountability, political stability, government efficiency, regulatory quality, the rule of law, and control of corruption.	The study concluded that risk management disclosure is higher in banks with higher Islamic governance quality. Also, it suggests that CLG has a moderating effect on the association between Islamic governance quality and risk management disclosure.
Blanc, Islam, Patten, & Branco (2017)	This paper investigates the relationship between media exposure concerning corporate corruption and corporate anti-corruption disclosure. The study also examines whether the level of press freedom in company's home countries could affect disclosure and the influence of media exposure in different ways.	Voice and Accountability and control of Corruption.	The findings indicate that media exposure is positively associated with differences in corporate anti-corruption disclosure. The study also points out that reduced press freedom seems to decrease the influence of media exposure on the disclosure.

Regarding the causal analysis of CED-related topics in the Arab MENA countries, Table 3.6 summarises the most important studies that investigated the variations in social and environmental disclosure. There are several insights could be highlighted from Table 3.6 related to the causal analysis of CED-related topics in the MENA region.

First, Table 3.6 indicates that the vast majority of causal explanations of CED have been undertaken at a single country-level across MENA countries such as Al-Khadash (2003) in Jordan, Naser et al. (2006) in Qatar, Al-Gamrh (2010) in Kuwait, Hussainey et al. (2011) in Egypt, Khlif et al. (2015) in Morocco, and Habbash (2016) in Saudi Arabia. This implies that empirical research carried out up to date delivers limited evidence of a comparative analysis related to CED, indicating the lack of comprehensive regional-level studies in the MENA region (Kamla, 2007).

Second, empirical research undertaken up to date provides limited causal analysis of the relationship between firm-level characteristics and CED in the MENA region. Crucially, these studies have concluded heterogeneous results regarding the effect of firm-level characteristics, such as firm size, leverage, profitability, age, nationality, sector type, on social and environmental disclosure across MENA countries (Naser et al., 2006; Ismail & Ibrahim, 2008; Al-Gamrh, 2010; Hussainey et al., 2011; Amine et al., 2013; Al-Ajmi et al., 2015). For example, Hussainey et al. (2011) found that profitability is the main determinant for the most of individual and aggregated CSR information in Egypt. Similarly, Gamrh (2010) revealed that the level of CSRD is influenced by firm size and profitability, while other firm-specific characteristics such as leverage; liquidity, firm age and the type of industry have no significant influence on CSRD in Kuwait.

Third, a few recent studies have investigated the association between social and environmental disclosure and other firm-level determinants such as firm financial performance, corporate governance, ownership structure. For instance, Khlif et al. (2015) indicate that CSRD has an insignificant association with corporate performance in Morocco. Likewise, Habbash (2016) concluded that ownership structure is positively associated with CSRD, while corporate governance found not to be a determinant of CSRD in Saudi Arabia.

Table 3.6: Causal Explanation of CED-related Studies in the Arab MENA region.

Author(s)	Aims of Study	Findings
Al-Drugi & Abdo (2012)	This paper investigates the relationship between CED and firm-specific characteristics in Libya.	The empirical results indicate a significant and positive association between the level of CED and firm size, privatisation and nationality.
Al-Khadash (2003)	This study examines the patterns of the disclosure of social and environmental responsibility information by the industrial Jordanian listed companies. Crucially, it examines the relations between a set of firm-specific characteristics and the level of social and environmental disclosure in Jordan.	The findings showed significant relations between firm size and the risk of managing, and social and environmental disclosure. Also, the findings indicated an insignificant association between the firm financial performance and social and environmental disclosure.
Naser et al. (2006)	This study attempts to test the validity of theories applied in the literature to explain variability in corporate social disclosure in Qatar.	The results suggest that the variability in CSD in Qatar is associated with firm-specific characteristics such as firm size, leverage and corporate growth.
Rizk et al. (2008)	The study aims to survey the corporate social and environmental reporting practices in Egypt.	The findings of this study are supportive of a significant relationship between of ownership structure on corporate social and environmental reporting decision.
Ismail & Ibrahim (2008)	This study investigates the extent to which social and environmental disclosure is associated with firm size, sector type and ownership structure in Jordan.	The results support the existence of a significant positive association between firm size and social and environmental disclosure, whereas a significant negative relationship has been found between government ownership and CSED practices. Also, there is no significant relationship between industry type and the level of social and environmental disclosure.
Al-Gamrh (2010)	This research examines whether the level of social disclosure is influenced by firm-specific characteristics in Kuwait.	The results revealed that the level of CSRD is influenced by firm size, profitability and the government ownership. Furthermore, the results confirmed that firm-specific characteristics such as leverage; liquidity, firm age and type of industry have no significant influence on CSRD in Kuwait.
Hussainey et al. (2011)	The study examines the determinants of individual and aggregated types of CSR information in Egypt.	The study finds that profitability is the main determinant for the most of individual and aggregated CSR information in Egypt.
Gana & Dakhlaoui (2011)	This article aims to identify the determinants of social and environmental disclosure and its relationship with the cost of equity in Tunisia.	The results show that firm size, sector type have a significant impact on CSRD. Additionally, the result suggests a significant nonlinear association between CSRD and the future cost of equity in Tunisia.
Amine et al. (2013)	This work seeks to determine the role of association marketing in the success of the corporate ethical and social responsibility (CESR) in Moroccan commercial banks.	The results indicate that ethics as a concept is employed by banks to manage its relations with internal stakeholders, although CSR supports ethics actions internally and acts externally through banks' relationship management with customers, society and the environment.
Naser & Hassan (2013)	This paper aims to measure the level of CSR and its determinants by non-financial firms listed on Abu Dhabi Securities Exchange.	The results reveal that CSR disclosure levels are associated with firm size, industry type and profitability.
Al-Ajmi et al. (2015)	This research aims to examine CSRD in Kuwait and to find out whether the level of CSRD is related to firm-specific characteristics.	The study demonstrated that CSRD is significantly influenced by firm size, profitability and the government ownership.
Khlif et al. (2015)	This paper investigates the relationship between CSRD and corporate performance for two African leading countries namely, South Africa and Morocco	Results show that CSRD has an insignificant effect on corporate financial performance in Morocco.
Habbash (2016)	This study aims to discover the potential influence of Corporate Governance, ownership structure, and firm-specific characteristics on CSRD in Saudi Arabia.	The analysis shows that ownership, firm size, and age are positively associated with CSRD, whereas firm leverage is negatively related to CSRD. Also, CG, profitability, and industry type are found not to be determinants of CSRD in Saudi Arabia.

In conclusion, Table 3.6 indicates that previous causal explanations of the variability in CED-related topics across Arab MENA countries have substantially concentrated on the investigation of firm-level determinants of CED practices in general such as firm-specific characteristics, firm financial performance, and corporate governance. This means that there is no attention being paid to investigate the country-level determinates of CED practices in the context of the Arab MENA region. Therefore, the current study distinctively contributes to the existing literature by investigating the critical policy questions of why and how country-level governance and region-specific pressures might influence CED practices in the MENA region from an institutional perspective. This study argues that a country's institutional regulations and norms can provide a restraining force upon companies that work within its governing environment (DiMaggio and Powell, 1983). Particularly, corporate environmental disclosure in effect *is* affected by the imposition of institutionalised norms; although companies actively negotiate the establishment of these standards in order to obtain their legitimacy (Campbell, 2007).

The following section discusses how the hypotheses have been developed in this study according to the previous empirical and theoretical literature.

3.6 Hypotheses Development

A substantial amount of studies have examined the association between CED and firm characteristics such as firm size, profitability and leverage (Alarussi, Hanefah, & Selamat, 2009; Cormier & Magnan, 2002; Jaggi & Freedman, 1982), as well as CED and both sector type and audit type (Alanezi, 2009; Ghazali, 2007; Haniffa & Cooke, 2002; Thompson & Zakaria, 2004). However, fewer studies employed these variables from an institutional perspective to explain CED practices, especially in those studies that have been conducted in MENA countries. Also, the literature lacks empirical and theoretical pieces of evidence investigating the association between CED and region-specific pressures such as business culture (British or French) and business environment (resource-based economies (GCC) and non-resource-based economies (non-GCC)) (Othman & Zeghal, 2010). Furthermore, to the best of the researcher's knowledge, this is the first study to investigate the relationship between CED and country-level governance in the Arab MENA region.

3.6.1 Firm-specific Characteristics and Environmental Disclosure

The previous empirical literature (in both developed and developing countries) reported a significantly positive association between firm characteristics (firm size, profitability, and leverage in this study) and voluntary disclosure including CED practices. For example, prior studies (Almilia, 2009; Brennan & Hourigan, 1999; Cordeiro & Tewari, 2015; Desoky & Mousa, 2009; Ortas & Gallego-Alvarez, 2015; Oyelere & Kuruppu, 2012; Oyelere et al., 2003; Trotman & Bradley, 1981), indicated a positively significant association between voluntary disclosure and firm size. One possible explanation for this relationship is that large corporations take on more events and have a more significant influence on a community (Haniffa & Cooke, 2005). Large enterprises are also subject to more inspection by several groups in society and thus will face greater pressure to provide the environmental information to legitimise their activities (Denis Cormier, Gordon, & Magnan, 2004). Firm size furthermore is related to CED because larger firms are often scrutinised by both the socially sensitive special interest groups and the public (Roberts, 1991). Also, large companies could have more shareholders concerned with CED practices and are more likely to utilise conventional communication mediums to deliver the required environmental information to the interested parties (Cowen, Ferreri, & Parker, 1987). Accordingly, it is expected that large firms are more likely to provide environmental information in their annual reports more than small companies.

In this sense, larger companies face more pressure to disclose their environmental information to avoid speculative trading of their shares (Alarussi et al., 2009). Moreover, from isomorphic mimetic pressure, similarly, sized firms are more likely to be similar regarding strategy and structure and depend on shared resource environment, as such are influenced by the same structural constraints (Hannan & Freeman, 1977). Additionally, large firms have same institutional logic that affects their accounting practices and the manner they maintain organisational legitimacy. Therefore, larger firms could share their disclosure practices influenced by mimetic and normative pressures to be in line with their counterpart.

On profitability, the variability in CED may be clarified, slightly, by variances in the profitability of firms. Managers in a profitable business could be encouraged to provide more CED practices to enhance their remuneration and maintain their reputation (Singhvi & Desai, 1971). Prior empirical literature (Ahmad & Sulaiman, 2004; Aly, Simon, & Hussainey, 2010; Freedman & Jaggi, 1982; Bragdon & Marlin, 1972) found a significant and positive

relationship between CED and profitability, as the literature concluded that the profitable firms are mostly large sized and tended to provide better disclosure practices.

Profitable firms, from an institutional perspective, are considered being more successful, and other companies are imitating them as models especially in the case of uncertainty (Burns & Wholey, 1993; Haveman, 1993). Arguably, successful firms could be imitated by other enterprises in the same sector to secure their legitimacy in a given context.

Leverage is another variable could influence the level of CED practices. There is empirical literature (Barako, Hancock, & Izan, 2006a; 2006b; Elsayed & Hoque, 2010; Prabowo & Angkoso, 2007) to indicate a positive relationship between CED practices and leverage. From an institutional perspective, the high leverage of powerful stakeholders and their desire for the environmental information could lead to a coercive isomorphism and result in putting pressure on those firms to have more disclosure practices (Hussainey, Boubaker, & Lakhal, 2011). As such, in the higher leveraged firm, stakeholders have a greater impact on its policies due to their ability to prevent the credit extension of further loans (Roberts, 1991). Therefore, managers disclose environmental information to accommodate their stakeholders. Also, a higher reliance on debt means a greater degree of leverage which persuades firms to publish the environmental information (Hossain, Tan & Adams, 1994). From the perspective of stakeholder, the environmentally harmful effects of specific activities could lead to fines or penalties that could also demoralise the interests of stakeholders themselves (Huang & Kung, 2010). Accordingly, stakeholders are apprehensive about firms' activities, and thus, they encourage them to provide the environmental disclosure practices (Ali & Rizwan, 2013). This study seeks to test the relationship between firm-specific characteristics and CED from an institutional perspective which was not considered in previous studies conducted in MENA countries. Therefore, according to the above argument, the first hypothesis to test is:

H1: Firm-specific characteristics are positively and significantly associated with CED in the Arab MENA region.

H1-1: Larger companies in the Arab MENA emerging markets provide more CED in their annual reports.

H1-2: Firms with a higher level of leverage in the Arab MENA emerging markets provide more CED in their annual reports.

H1-3: Companies with the upper level of profitability in the Arab MENA emerging markets provide more CED in their annual reports.

3.6.2 Country-level Specific Characteristics and Environmental Disclosure

Country-level governance (CLG) has considerable effects on specific firm disclosures (Kaufmann, Kraay, & Mastruzzi, 2011). Institutional theory suggests that companies working in countries with similar indicators of state governance (e.g., Voice and Accountability, government effectiveness and control of corruption) can have similar disclosure practices (Baldini et al., 2016). Moreover, in countries with dominant institutions, a firm could be influenced to disclose environmental information to legitimise their operations within their external environment (Beltratti & Stulz, 2012). Indeed, earlier research has confirmed that the greater order in the society and degree of law and, the higher level of corporate environmental engagement and disclosure, the greater legitimacy that a company achieves within a given society (Ioannou & Serafeim, 2012).

Recently few studies have investigated country-level determinants of social and environmental disclosure (Baldini et al., 2016; Ioannou & Serafeim, 2012). These studies have concentrated on understanding why companies embedded in different country-level institutions significantly show various disclosure practices. Also, they argued that significant cross-country variabilities in social and environmental disclosures might be attributable to idiosyncratic institutional, political, and cultural elements.

The main CLG indicators[5] that will be applied in this study are voice and accountability (V&A), government effectiveness (GE), and control of corruption (CC). Although Kaufmann et al. (2011) propose six CLG indicators, they are highly correlated to each other. Thus, only three variables (i.e., V&A, GE, and CC) could be used in the models of the present study. In line with previous studies (e.g., Enikolopov, Petrova & Stepanov, 2014; Lensink, Meesters, & Naaborg, 2008; Schiehll & Martins, 2016), the selection of these three CLG indicators specifically was based on conducting a factor analysis test to ensure that there is a common variable (i.e., CLG) of these indicators could be employed to explain the variability in CED practices, and the result was significant.

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[5] The Worldwide Governance Indicators (WGI) are a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries.

CLG structures contain formal constraints (e.g., laws, economic and political procedures and regulations, and other restrictions on corporate behaviour), and informal rules covering unwritten social norms, codes of ethics and values and conventions (Kaufmann et al., 2011; Schiehll et al., 2014). Thus, CLG quality might serve as an incentive for economic actors to be committed to regulations (Elamer et al., 2017). Therefore, governments in countries with rigorous CLG structures tend to require mandatory disclosure of social and environmental information and regulate market intermediaries and thus improving information asymmetries (Yoshikawa et al., 2014). Collectively, rigorous CLG can be considered as a valuable instrument of external governance to improve accountability and corporate disclosure quality (Elamer et al., 2017). For example, Barakat and Hussainey (2013) point out that companies operating within countries associated with greater country-level governance indicators across Europe are more likely to have better voluntary disclosure quality (i.e., risk disclosure). Also, countries with poor CLG tend to adopt IFRS early compared with other countries with strong CLG indicators in order to gain access to such important resources such as inwards FDI (Alon & Dwyer, 2014).

Therefore, the second main hypothesis to test in the current study is as follows:

H2: Companies operating in countries with higher state governance indicators in the Arab MENA region provide more CED in their annual reports.

On the basis of the arguments from earlier studies (e.g., Beltratti & Stulz, 2012; Shen & Lin, 2012; Essen, Engelen, & Carney, 2013) using the institutional isomorphism, it could be argued that the level of voice and accountability, government effectiveness and the control of corruption are important structural variables influencing CED practices.

Voice and accountability indicator in a country is associated with freedom of expression of citizens and associations, and free media (Kaufmann et al., 2011). Concerning the relevance of voice and accountability to corporate disclosure, it is highly expected that a higher level of media independence in a country is linked to an increased quality of the disclosed information on sustainable development by companies, including social and environmental issues (Lensink et al., 2008). Particularly, media attention could largely influence companies' reputation and assist changing their environmental performance and disclosure practices (Islam & Deegan, 2010). Therefore, companies operating in countries characterised by better indicators of voice and accountability are more likely to disclose environmental information in their annual reports

(Baldini et al., 2016). In this sense, Blanc et al. (2017) concluded that prior studies seemed to be consistently approving the argument that stronger media exposure could lead to increasing the levels of social and environmental disclosure. On the basis of previous evidence also, it could be argued that larger media exposure with regard to environmental issues seem to increase the particular political and social exposures of targeted companies in this regard. Accordingly, the first sub-hypothesis of the second hypothesis to test is as follows:

H2-1: Companies operating in countries with higher voice and accountability in the Arab MENA region provide more CED in their annual reports.

Governmental effectiveness and regulations on disclosure practices are likely to influence a corporation's operation, hence affecting the extent of corporate disclosure practices (Shen & Lin, 2012). Thus, government efficiency plays a substantial role in assisting a company's engagement with the country (Campbell, 2007). Prior empirical evidence (e.g., Amaeshi, Adi, Ogbechie, & Amao, 2006; Ioannou & Serafeim, 2012) has addressed these issues, emphasising the effects of the governmental regulations on the corporate social and environmental disclosure practices in various countries and hypothesising that a high country-level of formal institutions produces lower motivations for CED. Particularly, firms operating in states categorised by formal rules and constitutional and other governmental constraints might feel the less impellent necessity to report information beyond the formality needed from institutions (Baldini et al., 2016). According to Kaufman et al. (2011), government effectiveness indicator refers to public services quality, civil service quality and the extent of its independence from political influences, the quality of policy implementation and formulation, and the integrity of the government's compliance with such policies. In this sense, Lensink et al. (2008) argued that a higher independence degree of the public service from political influence increases the adaption of western sustainable development frameworks in those countries in order to attract more inward FDI where political pressure against the entry of foreign investments is prevailing. Based on the previous arguments, the second sub-hypothesis of the second hypothesis to test is as follows:

H2-2: Companies working in countries with greater government effectiveness in the Arab MENA region provide more CED in their annual reports.

Kaufman et al. (2011) indicate that control of corruption indicator captures perceptions of how public power could be exercised for private gains, containing both grand and petty forms of corruption, in addition to '*capture*' of the state by private interests and elites. The existing literature also reports that the corruption level in a country is an essential variable affecting environmental disclosure. For example, Fan et al. (2014) argued that managers of Chinese companies intend to manipulate accounting information in order to cover their opportunistic behaviour concerning expropriating interests from certain investors. Thus, the transparency and accountability of accounting information are diminished. Likewise, Lourenço et al., (2017) who analysed data from 33 countries worldwide point out that corruption is perceived to be associated with higher motivations for companies to manipulate social and environmental information, particularly in the case of emerging economies.

Given that, companies in the less corrupt environment are more likely to provide higher levels of CED practices (Beltratti & Stulz, 2012) where they are probably more engaged in ethical practices such as CED in order to achieve greater market shares or to decline their costs (Ioannou & Serafeim, 2012).

Thus, the third sub-hypothesis of the main second hypothesis to test in this study is:

H2-3: Companies operating in less corrupt countries in the Arab MENA region provide more CED in their annual reports.

Notably, these cross-nations governance dimensions are interrelated to each other. For instance, that better voice and accountability leads to more efficient and less corrupt government (Kaufmann et al., 2011), and these characteristics are positively associated with CED practices (Baldini et al., 2016; Ioannou & Serafeim, 2012)

3.6.3 Type of Sector

The impact of sector type on CED practices has been considerably investigated by earlier studies in both developed and developing countries (Ali & Rizwan, 2013; Ghazali, 2007; Haniffa & Cooke, 2002; Thompson & Zakaria, 2004). CED literature reported a significant level of variability in CED practices amongst firms operating in different sectors (Marston, 2003; Oyelere et al., 2003). With respect to MENA countries, fewer studies have investigated the relationship between sector type and CED at a single country level (e.g. Al-Shammari, 2007; Elsayed, 2010) which reported positive and significant associations. Arguably, the various levels of environmental disclosure of companies working in different sectors could be attributed to the disclosures of the companies that lead each sector (Oyelere et al., 2003; Marston, 2003); and thus, firms in the same sector are more likely to follow that leading company in response to their institutional pressures in order to be legitimate and acceptable reflecting a society of practice, and indicative of mimetic isomorphism (Amran & Haniffa, 2011). Consequently, the third hypothesis to be examined is:

H3: Companies operating in environmentally sensitive sectors in the Arab MENA countries provide more CED in their annual reports.

3.6.4 Business Culture

Arab MENA countries were mainly characterised by either a strong connection with the US and the UK (Anglo-American) or with Europe such as France and Italy. The States of Arabian Gulf (e.g. Saudi Arabia, Kuwait, Qatar, etc.) further to Jordan and Egypt preserve advantaged economic relationships with the UK and the US. On the other hand, Arab MENA countries that were colonised by France (e.g. Morocco, Algeria, Tunisia, Lebanon, and Syria) have advantaged economic associations with France. Hence, the culture of business inherited from previous colonialists and principal trading partners could be a fundamental reason explains the variability in CED practices across the Arab MENA countries (Akrout & Othman, 2013). In this respect, the expectations and requirements of particular disclosure in European countries are less than Anglo-American countries (Saudagaran & Biddle, 1992). Prior empirical evidence indicated that companies operating in MENA countries which are tied economically to British business culture are more likely to have the higher level of disclosure and transparency scores than those working in countries linked with French business culture (Othman & Zeghal, 2010). The institutional framework suggests that cultural values play a significant role in impacting on professionals' expectations to adopt such organisational practices (e.g. CED practices), and

adopting CED, in this case, is associative of normative forces (Deegan, 2009; Ali & Rizwan, 2013). At the regional level, countries that have a similar business culture tend to have comparable levels of CED practices which are collectively reflecting normative and mimetic pressures. Therefore, the fourth hypothesis to be tested is:

H4: Companies in countries tied with British business culture in the Arab MENA emerging markets provide more CED in their annual reports rather than their French business culture counterparts.

3.6.5 Type of Auditor, Big 4

The kind of auditing has often been classified into two main types which are firms audited by one of the Big 4[6] auditors and enterprises have been verified by others (Non-Big 4 Audit companies) (Ntim, 2009). Big four auditors are widely spread across the world, whereas the majority of the other small audit companies are operating domestically (Alsaeed, 2006). Debatably, the type of auditor has a substantial impact on firm's voluntary disclosure practices bringing such kind of isomorphic normative pressure to a particular organisational field (Al-Mulhem, 1997). Thus, a company that has been audited by one of the Big 4 auditing firms is more likely to deliver more voluntary CED practices than other enterprises that are not (Hung & Kung, 2010). Additionally, the Big 4 auditors are tending to demand the environmental information to avoid costly litigation and maintain its reputation (Hung & Kung, 2010). Thus, firms audited by big 4 audit companies are extending a higher recognition to the quality of their environmental disclosure. Previous studies in the MENA region (e.g., Alsaeed, 2006; Eltkhtash, 2013) stated a significant positive relationship between voluntary corporate disclosure and the type of audit. Hence, the fifth hypothesis to test in this study is:

H5: Companies audited by one of the big 4 auditors in the Arab MENA region provide more CED in their annual reports.

3.6.6 Gulf Co-operation Council (GCC)

The sub-region may clarify the variances in CED among the Arab MENA countries. The sampled countries could be classified into two sub-regions; five (GCC) countries (Kuwait, Oman, Qatar, Saudi, and UAE) which are considered to be resource-based economies and a

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[6] The big 4 audit companies are; PricewaterhouseCoopers, Ernst & Young, Deloitte, Touché Tohmatsu and KPMG

Non-GCC sub-region which are non-resource-based economies (i.e., Egypt, Jordon, Morocco, and Tunisia). From an institutional perspective, mimetic pressures could interpret the variations in CED practices between the two Arab MENA sub-regions. In other words, firms operating in the same sub-region tend to have similar disclosure practices (Eltkhtash, 2013); and this may lead to a community of practice by firms within one region.

This study has an excellent opportunity to investigate the effect of sub-region (GCC or not) on CED practices provided by listed firms in the MENA region. Therefore, it assumes a significant association between GCC and CED practices. This assumption could be justified by two reasons: 1) prior voluntary disclosure literature has shown a significant relationship between the GCC sub-region and the voluntary disclosure such as Eltkhtash, (2013); 2) the current study involves two different sub-regions that are varying economically and politically (GCC and not). Furthermore, there is a dearth of studies that have investigated the effects of sub-regions or business environment in the MENA region on CED practices. Thus, the sixth hypothesis to be examined is:

H6: Companies operating in the GCC countries are more likely to have more CED in their annual reports.

3.6.7 The Control/Omitted Variables

In the present study, to decrease the potential endogeneity and bias of the omitted variables, a couple of control variables are considered namely the log of Gross Domestic Product (GDP) and five-year Dummies (YD) from 2010 to 2014. Additionally, it is worth noticing that these control variables were selected on the basis of prior voluntary disclosure literature, as they are unavoidably restricted to the level that they could not be exhaustive (Ntim, 2009; Larker & Rusticus, 2010). Arguably, there are other variables have a potential effect on CED practices, which could not be involved in the research model due to various reasons, such as lack of proper theoretical links, and the unavailability of data (Akrout & Othman, 2013).

Figure 3.2 presents the hypothesised association between the three types of independent variables (firm-specific characteristics, country-specific determinants and region-specific pressures) and the level of CED practices in the MENA region employed from an institutional perspective as has been discussed earlier in this section.

Firm-Level

Firm Characteristics (Firm Size, Profitability and Leverage).

Auditor Type

Country-Level

Country-level Governance (V&A, GE, and CC).

Sector Type

Region-Level

Business Culture

Business Environment (GCC or not)

Institutional Theoretical Perspective

Mimetic

Coercive

Normative

The level of CED practices in the MENA region

H1

H5

H2

H3

H4

H6
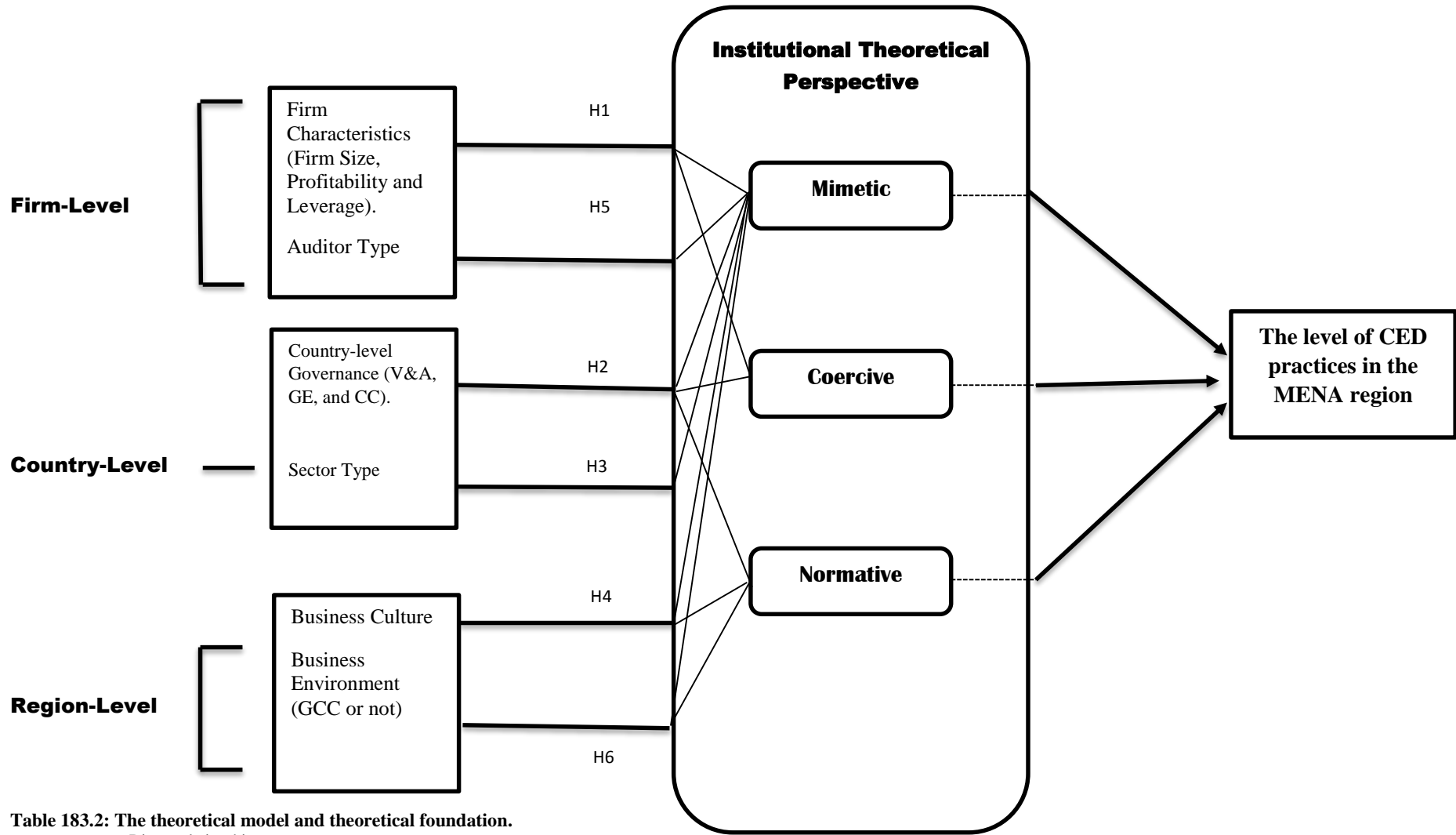
Table 183.2: The theoretical model and theoretical foundation.

Direct relationship

Explained through

3.7 Conclusion

This chapter has reviewed the CED-related literature and defined elements on voluntary disclosure in general and CED in particular. The previous studies attempted to explore and investigate the amount of CED in both developed and developing communities, with studies carried out in the advanced economies far outweighing those in their developing counterparts, particularly in the context of the MENA region. Most of MENA CED-related studies have been confined to a single country, and few studies are undertaken in multi-country settings. Also, existing empirical research to date offers insufficient *comparative data* related to the environmental disclosure of firms across the region, indicative of a lack of comprehensive regional-level studies (Kamla, 2007; Islam & Deegan, 2008).

Institutional theory can be used to provide essential explanations for the reasons behind the adaptation of CED within a given organisational field. Likewise, it has been utilised to understand the differences of firms' CED implementation in both developed and developing economies (Peng et al., 2008). Accordingly, this study theoretically contributes to the existing literature by examining multi-level determinants of CED in the MENA region from an institutional perspective. To the best of researcher's knowledge, the employment of an institutional framework has not been considered to explain the variability in CED practices in those studies that have been carried out in the Arab MENA region, where the use of theoretical foundation is hardly abundant.

A substantial amount of studies has examined the association between CED and firm-specific characteristics in both developed and developing countries. However, fewer studies have employed these characteristics from an institutional perspective to explain CED practices, particularly those undertaken in MENA countries. Also, the literature lacks empirical and theoretical pieces of evidence investigating the association between CED and region-specific pressures such as business culture (British or French) and business environment (sub-region, GCC or not) (Othman & Zeghal, 2010). Furthermore, to the best of the researcher's knowledge, there is no study has examined the relationship between CED and country-level governance across MENA countries. As such, this study explores the levels, trends and patterns of CED across the Arab MENA companies. The study then investigates how the expected variability in CED could be explained by using multi-level determinants (i.e., firm-specific characteristics, country-level governance and region-specific pressures) employed from an institutional perspective.

The next chapter illustrates and discusses the research methodology that will be used to achieve the objectives of this study.

Chapter Four: Research Methodology

4.1 Introduction

This chapter presents and discusses the research methodology used to achieve the objectives of the current study. This research has substantially been divided into two pieces of work. First, it determines the levels, trends and patterns of environmental disclosure in the annual reports provided by listed firms on nine Arab MENA emerging markets by using the technique of content analysis. Second, it explains the expected variability in CED practices in the region by using multilevel variables (e.g., firm-specific characteristics, country-specific indicators, and region-specific pressures) employed from an institutional perspective by estimating a pooled Ordinary Least Squares (OLS) model. The paradigm of this research will be discussed regarding research philosophy, human nature and methodology. This chapter then explains and justifies the selection of content analysis technique to measure CED practices in the region. Then, it determines and rationalises the sampling criteria applied in this study. Finally, the statistical tests employed for the study's purposes will be highlighted. The next section identifies and discusses the paradigm of the current research.

4.2 Research Paradigm

Crucially, there are four assumptions of any research paradigm namely ontology, epistemology, human nature and methodology (Burrell & Morgan, 1979). Each one consists of two different positions regarding two research philosophies, which are subjectivism and objectivism. Figure 4.1 replicates a schematic diagram presented by Burrell & Morgan (1979) as follows;

4.1: Assumptions regarding the Nature of Social Science, Source: Burrell & Morgan (1979, P. 3).
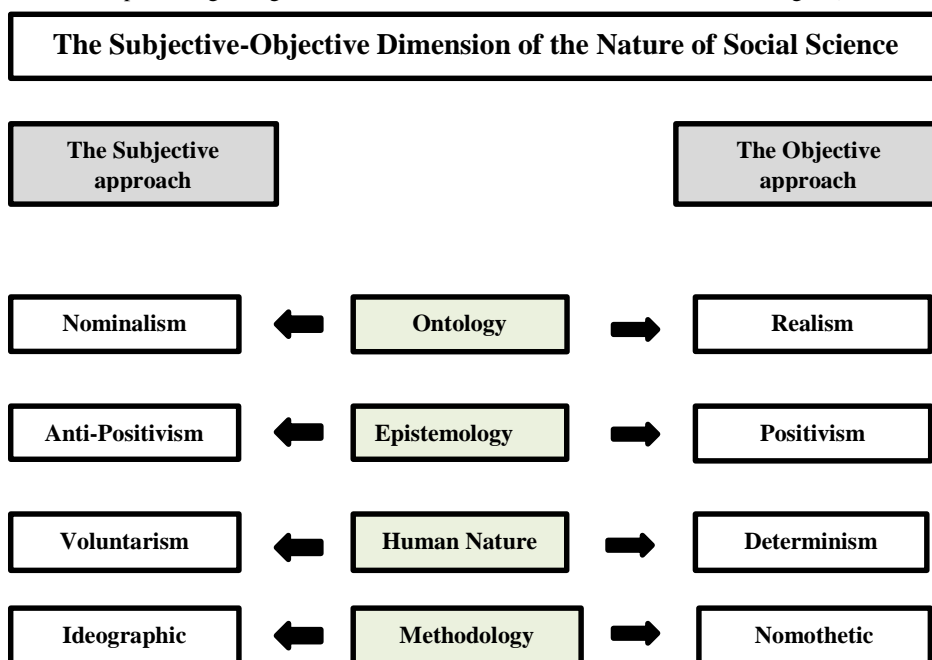
The ontological proposition of social research concerns the beliefs of the researcher about the nature of reality. In this regard, Crotty (1998) defined ontology as being:

"The research of the nature of reality or being, and it is concerned with understanding 'what is', with the structure of reality and the nature of existence".

Burrell & Morgan (1979), furthermore, advocate that the ontological proposition is at the core of research phenomena, and promotes the main question about the nature of reality. Collectively, the primary issues of ontology are related to the query of whether the 'reality' to be studied is external to the individual – imposing itself on individual awareness? (Eltkhtash, 2013, p142).

The assumption of ontology could be realised from two different attitudes, which are objectivism and the subjectivism. The subjectivist approach has been commonly known as nominalism. This approach sees the social world as a result of the consciousness of individuals. By contrast, the objectivism is recognised as realism, suggesting that reality exists independently from the appreciation of individuals, and regarded as an external reality (Morgan & Smircich, 1980). The realism approach presumes that social world is tangible, concrete and consistent, with a relatively constant structure (Burrell & Morgan, 1979).

In other words, the realist position believes that reality is singular and objective, and utilises quantitative methods in conducting research; whereas nominalists reflect a multiple and subjective reality using qualitative research methods (Nwokah et al., 2009).

On the other hand, epistemology concerns make knowledge and relevant research, since it includes how to examine the associations between what is being researched and the researcher (Hussey & Hussey, 1997). Also, the epistemology has been defined as being:

"A general set of assumptions about the best ways of inquiring into the nature of the world" (Easterby-Smith, Thorpe, & Jackson, 2012, p18).

Furthermore, epistemology reflects the nature of human knowledge that could potentially be obtained by various kinds of inquiry and alternative methods of study (Hirschheim, Klein, & Lyytinen, 1995). In this context, the epistemology has been defined as:

"The theory of knowledge embedded in the theoretical perspective and thereby in the methodology" (Crotty, 1998, p 3).

Although the main ontological question is related to what is the nature of reality, the basic question in terms of epistemology is associated with what is the nature of the relationship between the knower or would-be knower and what can be known (Guba & Lincoln, 1994). Crucially, objectivists employ

positivism approach to address the research questions, whereas subjectivists adopt anti-positivism approach (Burrell & Morgan, 1979).

Positivists regard the world as an objective and prefer quantitative methods. Positivists believe in the independence of researchers from what is being studied and only phenomena under observation and measurement could be considered as valid knowledge (Nwokah et al., 2009), or at least the most desirable. On the other hand, anti-positivists recognise and accept subjectively and lead to preferring qualitative methods. Anti-positivists also take into their consideration the interaction between researchers and what is being studied and they could be involved in the participative enquiry (Nwokah et al., 2009). Anti-positivists, furthermore, reject objectivity and the necessity of observer independence (Burrell & Morgan, 1979).

Concerning human nature, the second part of a research paradigm, Burrell & Morgan (1979) asserted that it concerns with the association between human beings and the surrounding environment. The idea of human nature has been classified into two dimensions are determinism and voluntarism. Determinists assume that their surrounding environment influences people and their knowledge. In contrast, voluntarism sees human beings as independent and assumes that individuals are the controllers and creators of their environment and actions (Burrell & Morgan, 1979). In the next paragraph, the term methodology will be discussed to obtain further understanding of research paradigm.

Critically, different assumptions of ontology, epistemology and human nature lead to different research methodologies (Saunders et al. 2011). Research methodology has been defined as a set of rules that enable researchers to conduct their studies (Harding, 1987). Also, it could be considered as an analysis and a theory that is related to how a study should proceed (Nwokah et al., 2009). Arguably, it involves accounts that deal with how "the broad construction of such theory finds its application in specific scientific disciplines" (Collis & Hussey, 2003, p 55). Moreover, the methodology indicates the general approach of the research procedure, from the theoretical foundation for the data collection and analysis (Mingers & Brocklesby, 1997). A more comprehensive definition has been offered by Crotty (2005, p 3) who has defined it as:

The strategy, plan of action, process and design lying behind the choice and use of particular methods and linking the selection and use of methods to the desired outcomes.

 Additionally, the research methodology indicates a combination of methods and techniques that help the researchers to investigate the research phenomena (Easterby-Smith et al., 2002). Particularly, any

research methodology is concerned with major issues associated with queries such as why the data has been collected, what kind of data was collected and from where the data was collected, as well as how and when the needed data should be collected, and how that data must be analysed (Collis & Hussey, 2003). Collectively, the main assumption of methodology concerns with how a researcher obtains knowledge about the world. These are two broad approaches, namely the nomothetic 'objectivist' and the ideographic 'subjectivist'.

The nomothetic approach regularly adopts quantitative research methods. While the objectivism under this approach concentrates on testing research hypotheses, the objectivists utilise experimental and quantitative methods to attain their research objectives (Burrell & Morgan, 1979). The ideographic approach, on the other hand, assumes that the understanding of the social world could be related to obtaining the first-hand knowledge of the investigated subject (Mingers & Brocklesby, 1997). This concept means that the researchers are required to go into circumstances and study the complexities of specific themes. Furthermore, the data collection process in this approach depends on employing qualitative research methods (e.g. case studies and interviews) (Burrell & Morgan, 1979).

The combination of regulation and objectivist creates the functionalist approach which suggests that the society has a concrete existence and follows specific order and theories could be objectively evaluated by reference to empirical data (Ardalan, 2003a). Arguably, functionalism assumes that the objective assessment of scientific theories could be achieved through reference to empirical evidence (Ardalan, 2003a). This paradigm is considered as a highly pragmatic perspective regarding orientation and seeks to provide an understanding of society to generate valuable knowledge. It concerned with social issues control and effective regulation (Burrell & Morgan, 1979). Mainly, functionalism tends to be connected to statistical testing and is hypothesis driven (Ardalan, 2003b).

According to the arguments mentioned above, this study employs a functionalist approach which follows ontological realism and epistemological positivism regarding research philosophy and adopts determinism approach regarding human nature, and nomothetic approach in terms of methodology. Thus, the current study applies a quantitative research approach using specific techniques, protocols, and procedures which have been obtained from the natural sciences and emphasise the testing of hypotheses. Quantitative techniques have been implemented in the current study to achieve various advantages related to data generalizability, reliability and objectivity (Hussey & Hussey, 1997). Therefore, the study seeks a quantitatively measured exploration and explanation of CED practices in the Arab MENA region. This study consists of two primary pieces of work. First, an unweighted content analysis technique was employed to determine the levels of, patterns and trends in, CED

practices provided by 180 listed firms on nine Arab MENA stock markets during the period from 2010 to 2014. Second, consistent with previous studies that applied balanced panel data (e.g., Elghuweel, 2015; Ntim, 2009; Ntim & Soobaroyen, 2013); the empirical examination is conducted by using Ordinary Least Squares (OLS) technique in order to examine the relationship between multilevel factors (firm-level determinants, country-level determinants, and regional-level pressures) employed from an institutional perspective on the one hand and the CED practices that measured in the first stage of the study on the other hand.

The following section discusses the technique of content analysis that was employed to achieve the first main objective of the study.

4.3 Content Analysis

This section provides an overview of the technique of content analysis adopted for this study. It first justifies the selection of content analysis as a method used to achieve the first piece of work in this study. This stage explores the levels, trends and patterns of CED practices among a sample of listed firms in nine Arab MENA emerging markets. Next, a background of content analysis is provided. It also determines and justifies the source of data selected for conducting content analysis in this study. Then, content analysis categories and disclosure index are discussed based on reviewing the relevant literature of developed and developing countries. Additionally, the calculation process of the disclosure index is adopted based on the previous literature and global reporting initiatives. Finally, it assesses the reliability and validity of the content analysis technique.

4.3.1 Content Analysis Background:

Content analysis was first used by non-accounting or social researchers, where it had been applied in the Second World War to analyse the content of radio news and newspapers (Krippendorff, 2004). Previous CED literature documents that content analysis was first employed by an earlier survey conducted by Ernst & Ernst (1976) (Momin, 2006). Crucially, content analysis has been previously defined as being:

"A research technique for making replicate and valid inferences from data to their context" (Krippendorff, 1980, p 21).

Also, Wolfe (1991, p 282) has defined content analysis as:

"Coding words or other units of text against the particular schema of interest reducing the text to more structured and concise units of information so that inferences can be drawn from the text or its source".

A more inclusive definition of content analysis has been offered by (Guthrie, Petty, & Yongvanich, 2004, p 287) who defined it as:

"A method of codifying text into various categories based on selected criteria, the content analysis assumes that frequency indicates the importance of the subject matter".

Notably, despite the difference between these definitions, the primary purpose of the content analysis is to provide inferences from the texts (e.g. annual reports). These inferences could be related to the message itself and/or the message's sender(s) and /or the audience (receivers or users) of the message.

Table 4.1 below lists previous social and environmental disclosure studies that applied content analysis. This table shows that annual reports are the most popular source of data used in the literature of CED to conduct the content analysis. The next subsection explains the stages of content analysis in more detail.

4.3.2 The Justification of Content Analysis Selection:

Content analysis is used to provide an analysis of the volume of CED practices provided in the annual reports of listed firms across nine Arab MENA emerging markets in a period between 2010 and 2014. Content analysis is regarded to be one of the fastest growing quantitative techniques in social and business research, where it was extensively used in social and environmental disclosure studies (e.g., Adams, Hill, & Roberts, 1998; Andrew, Gul, Guthrie, & Teoh, 1989; Belal et al., 2010; Cho & Patten, 2007; Deegan & Gordon, 1996; Freedman & Stagliano, 2008; Gray et al., 2001; Guthrie & Parker, 1990; Harte & Owen, 1991; Kuasirikun & Sherer, 2004; Liu & Anbumozhi, 2009; Lock & Seele, 2015; Ntim, 2016; Ullah et al., 2014; Williams & Pei, 1999). There are many theoretical and empirical reasons behind the selection of the content analysis technique in this study. Firstly, this technique has been built on a regular basis assists the improvement of longitudinal data and helps researchers to access a wide range of data provided in the documents about firm's performance (Milne & Adler, 1999). Secondly, the reality that is reflected by textual analysis is more likely to be fair and unbiased (Sarantakos, 2005). Finally, regarding the ethical consideration, the data collected by using content analysis, could be collected naturally without compromising the respondent's anonymity (Neuendorf, 2002).

4.3.3 Stages of Content Analysis

Certain technical stages should be considered in the process of content analysis to be effectively conducted (Silverman, 2006). The first step is to select the source of environmental data based on the previous literature. Table 4.1 shows that the majority of previous studies has used annual reports as a

source of empirical investigations. Therefore, annual reports are selected to be the source of environmental information in this study. The second stage is to determine and categorise the different environmental items of content analysis. The third stage is to adopt a calculation technique of the disclosure index, and then, the validity and reliability of content analysis should be assessed. The following subsections discuss the different stages of conducting the content analysis.

Table 4.1: Previous Content Analysis Studies that related to CED Practices.

Study	Documents analysed (Annual report)	Measurement unit				
		No. of words	No. of Sentences	No. of lines	No. of pages	% of pages
Ernst & Ernst (1978)						×
Trotman & Bradley (1981)	×					
Wiseman (1982)	×	×				
Cowen et al. (1987)	×	×				
Zeghal & Ahmed (1990)	×	×				
Gray et al. (1995)	×					×
Adams et al. (1995)	×					×
Hackston & Milne (1996)	×					
Deegan & Gordon (1996)	×	×				
Deegan & Ranking (1996)	×	×				
Thomas & Kenny (1996)	×					×
Burritt (1997)	×	×				
Neu et al. (1998)	×	×				
Tsang (1998)	×		×			
O'Dwyer & Gray (1998)	×					
Choi (1998)	×			×		
Buhr (1998)	×		×			
Williams & Pei (1999)			×			
Campbell (2000)	×	×				
Abu-Baker & Nassr (2000)	×					×
Imam (2000)	×			×		
Belal (2001)	×			×		
Nikam & Wickramarachchi (2002)	×	×				
Andrew (2002)	×	×				
Freedman & Staglino (2002)	×	×				
Nuhoglu (2003)			×			
Holland & Foo (2003)	×		×			
Campbell et al. (2003)	×	×				
Thompson & Zakaria (2004)	×		×			
Campbell (2004)	×	×				
Anuar et al. (2004)	×		×			
Saleh (2004)	×	×				
Xiao et al. (2005)	×	×				

Papers	Documents analysed (Annual report)	Measurement unit				
		No of words	No of sentences	No of lines	No of pages	% of pages
Raman (2006)	×		×			
de Villiers & Staden (2006)	×	×				
Hossain et al. (2006)	×	×				
Silberhorn & Warren (2007)	×					
Cho & Patten (2007)	×	×				
Islam & Deegan (2008)	×	×				
Dahlsrud (2008)			×			
Zubek (2008)	×				×	
Clarkson et al., (2008)	×	×				
Sobhani (2009)	×		×			
Belal & Kabir (2010)	×		×			
Esa & Ghazali (2010)						
Tilling & Tilt (2010)	×	×				
Islam & Deegan (2010)						
Villiers & Staden (2011)			×			
Ishwerf (2012)	×	×	×			
Dominguez (2012)	×		×			
Ntim et al. (2012)	×	×				
El-Jayash et al. (2012)	×	×				
El-Drugi (2013)	×	×				
Ntim & Soobaroyen (2013)	×	×				
Akrout & Othman (2013)		×				
Ullah et al. (2014)	×	×	×			
Elmogla et al. (2015)	×	×				

Source: El-Drugi (2013) and Researcher's own

4.3.3.1 Content Analysis Unit – the Source of Data

The two main issues that should be considered to determine the unit of content analysis are the source of data and the analysis categories (Adams & Kuasirikun, 2000). Annual reports are regarded to be the largest source of information for decision-makers (Belal & Cooper, 2011). As such, the selection of firms' annual reports as the source of environmental information in this study was motivated by many theoretical and empirical reasons. Firstly, the annual report is freely published and less difficult to be accessed rather than other kinds of reports (Epstein & Freedman, 1994; Tilt, 1994; Unerman, 2000). Secondly, the annual report is also considered to be an institutionalised form of corporate disclosure prepared on a standard basis every year (Buhr, 1998). Thirdly, it is broadly known as

holding a high level of credibility and reliability (Deegan & Rankin, 1997; Epstein & Freedman, 1994). Fourthly, this concentration on a company's annual report was also in line with prior social and environmental disclosure studies, since the annual reports were the main form of firm communication (Gray et al., 1995). Therefore, what companies do not report can be of interest, not just what they do disclose (Adams & Harte, 1998).

In this sense, Adams & Harte (1998, p784) conclude that:

> "Our acceptance of the social importance of the annual report stresses its potential (rather than fact) to be influential. Corporate annual reports can, therefore, be of interest to much for what they do not report, as for their actual content. This focus on the corporate annual report was also consistent with previous social disclosure studies since the corporate annual report was the main form of business communication."

Also, the stand-alone environmental reports are still not popular in the Arab MENA region, and firms in the area are crucially using annual reports to disclose their environmental information (El-Jayash et al., 2012). Therefore, the annual reports have been selected to be the main source of environmental data in the current study.

4.3.3.2 Content Analysis Categories – Disclosure Index

Earlier CED literature offered no coherent definition of what constitutes environmental information (Islam, 2009). Most previous studies defined environmental information based on an early survey conducted by Ernst and Ernst (1978) that identified the environment as a key category in corporate social disclosure and included certain items such as pollution prevention and control, natural resources conservation and other environmental information. However, the mainstream of earlier studies (see table 4.1) has employed a combined view of environmental disclosure such as using the total number of words or sentences rather than individual disclosures into primary categories (Campbell, 2004). While these studies involved some CED classification scheme, they had no distinct definitions of such disclosure groupings or separately integrated them into empirical analyses (Brammer & Pavelin, 2006; Deegan & Gordon, 1996; García-Ayuso & Larrinaga, 2003; Post et al., 2011; Stanny & Ely, 2008).

Various content analysis approaches were applied to analyse environmental disclosures in corporate annual reports and other types reports. These methods range from a complicated coding and counting of every word, sentence, page, graph, chart, table and probably pictures systematically in the report, to the use of a disclosure index as a basis to strive for evidence that an environmental item is disclosed or is not (Hooks & van Staden, 2011).

Arguably, the use of words frequency or keywords to measure environmental disclosure may not be enough. For example, Milne and Adler (1999) argued that employing the number of words or keywords in isolation from the meaning of the entire sentence might not deliver a sound unit of analysis and may yield misleading Findings (Beattie and Thomson, 2007). Likewise, the problem of the presentation and position of environmental information might increase the complexity of the measurement of CED (Hassan & Marston). In this sense, Weber (1990) state that using the count of words should take account of all potential synonyms of words with several meanings.

Furthermore, Hackston and Milne (1996) argued that the disclosure of environmental issues using the number of pages is a less reliable and accurate method because of different formats, margins, and font sizes. Also, Al-Tuwaijri, Christensen, and Hughes (2004) expressed the concern that a frequency of words and sentences ignores tables and graphs and Gray et al. (1995) concerned that a word count discounts the meaning of the words. Similarly, Beattie and Thomson (2007) cited several concerns regarding using a word count as a measurement of CED such as discounting the verbose use of words, surrounding context of the item, multiple items were disclosed in one sentence, etc.

On the other hand, disclosure indices are regarded to be a valid and practical research instrument (Botosan, 1997; Cheng, 1992) with the adoption of the disclosure items in the index based on benchmarks such as the global reporting initiative or based on previous sound literature (Hooks & van Staden, 2011). Therefore, to avoid the above mentioned concerns regarding the use of the frequency of words, sentences or pages in the measurement of CED practices, this study built on previous CED literature and developed a comprehensive disclosure index to measure CED practices in the MENA region (Gray et al., 1995b; Hackston & Milne, 1996; Wiseman, 1982). This index was extended by more adoptions from CED literature in developing countries including countries from the MENA region (Akrout & Othman, 2013; Hossain et al., 2006; Islam & Deegan, 2010; Ullah et al., 2014). This index, furthermore, was expanded using the Global Reporting Initiative (GRI, 2006; 2011) to make it a more comprehensive index could be applied in different developing countries. As such the environmental disclosure index includes items relating to firms' environmental policies, environmental product and process (pollution), environmental energy, environmentally related financial information and environmental other. This study, therefore, contributes to the literature by developing a disclosure index in order to measure CED practices in the Arab MENA region specifically (see Table 4.2).

Table 4.2: The Environmental Items considered for Disclosure Index Development

Environmental policy

No	Adopted from	Environmental items
1	Islam & Deegan (2010)	General statements of "the firm will, or the firm does" nature.
2	Gray et al. (1995)	Actual statement of policy.
3	Islam & Deegan (2010); Hackston & Milne (1996)	Statements are demonstrating that pollution caused by firm's operations will be or has been reduced.
4	Islam & Deegan (2010); GRI (2006)	Disclosing firm's energy policies.
5	Akrout & Othman (2013)	The assessment of investments to involve such concerns towards the surrounding environment.

Environmental product-process:

No	Adopted from	Environmental items
6	Gray et al. (1995); Hackston & Milne (1996); GRI (2006).	The management of waste(s)
7	Gray et al. (1995); Ullah et al. (2014); GRI (2006).	Eco-efficiency
8	Gray et al. (1995); GRI (2006).	Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.
9	Akrout & Othman (2013); Ullah et al. (2014); GRI (2006).	Climate change, carbon sequestration.
10	Gray et al. (1995); GRI (2006).	Products & product development, involving products that assist in protecting the environment.
11	Wiseman (1982); Hossain et al. (2006)	Information on air emission.
12	Wiseman (1982); Hossain et al. (2006)	Information on water discharge.
13	Wiseman (1982); Hossain et al. (2006)	Research is conducting on new production approaches that used to reduce the environmental pollution.
14	Gray et al. (1995)	The technologies of pollution prevention.
15	Gray et al. (1995)	The control of industrial process contamination.
16	Hackston & Milne (1996)	The reductions in business operations pollution.
17	Wiseman (1982); Gray et al. (1995); Hossain et al. (2006)	The disposal information of Solid waste(s).
18	Wiseman (1982); Gray et al. (1995); Hossain et al. (2006)	Natural resources conservation.
19	Wiseman (1982); Gray et al. (1995); Hossain et al. (2006); GRI (2006).	Waste products recycling plant.
20	Wiseman (1982); Gray et al. (1995); Hossain et al. (2006)	The plant of effluent treatment installation.
21	Wiseman (1982); Gray et al. (1995); Hossain et al. (2006)	The programs of Land forestation and reclamation.
22	Wiseman (1982); Hackston & Milne (1996); Hossain et al. (2006); GRI (2006).	The conservation of raw materials.

Continuation of Table 4.2

NO	Adopted from	Environmental items
23	Akrout & Othman (2013); GRI (2006).	Total direct and indirect greenhouse gas emissions.
24	Akrout & Othman (2013); GRI (2006).	Initiatives to reduce greenhouse gas emissions.
25	Akrout & Othman (2013); GRI (2006).	Emissions of ozone-depleting substances by weight.
26	Islam & Deegan (2010); Hackston & Milne (1996)	The undertaking of wildlife conservation.
27	Islam & Deegan (2010); Hackston & Milne (1996)	Noise

Environmental Energy:

NO	Adopted from	Environmental items
28	Gray et al., (1995); GRI (2006).	The conservation and the saving of energy.
29	Gray et al., (1995); GRI (2006).	Use/ exploration/ development of new sources, insulation, efficiency etc.
30	Wiseman (1982); Gray et al., (1995); Hackston & Milne (1996); Hossain et al., (2006)	Waste materials utilisation for energy conservation.
31	Wiseman (1982); Gray et al., (1995); Hackston & Milne (1996); Hossain et al., (2006); GRI (2006).	Initiatives to reduce the consumption of energy.
32	Hackston & Milne (1996)	The voicing of firm's concern about the shortage of energy.
33	Akrout & Othman (2013)	Direct use of energy.
34	Akrout & Othman (2013); GRI (2006).	Indirect use of energy.
35	Hackston & Milne (1996)	Energy saving is disclosure caused by product recycling.
36	Hackston & Milne (1996); GRI (2006).	Disclosing increased the energy efficiency of products.
37	Hackston & Milne (1996)	Receiving awards for the programs of energy conservation.

Environmental financial:

NO	Adopted from	Environmental items
38	Wiseman (1982); Hossain et al., (2006); Ullah et al., (2014)	The discussions of areas with economic/financial impacts.
39	Wiseman (1982); Hossain et al., (2006); Ullah et al., (2014)	The discussion of economic- environmental interaction.
40	Hackston & Milne (1996)	Provisions, Contingencies.
41	Wiseman (1982); Hossain et al., (2006)	Environmentally related loans, costs of purchasing, grants and installing new green equipment & machines and consultancy costs & maintenance.
42	Wiseman (1982); Hossain et al., (2006)	Previous & present expenditure for pollution control.
43	Wiseman (1982); Hossain et al., (2006)	Expenditures estimated in future for pollution control facilities and equipment.
44	Hackston & Milne (1996)	Allocation record of a specific fund.

No	Adopted from	Environmental items
Environmental other:		
45	Gray et al., (1995)	Environmental education.
46	Islam & Deegan (2010); Hackston & Milne (1996)	Training related to environmental management and environmental accounting for employees, accountants and managers.
47	Islam & Deegan (2010); Hackston & Milne (1996)	Environmental awards.
48	Hackston & Milne (1996)	Environmental research.
49	Hackston & Milne (1996) and the Pilot Study	Partnerships between environmental research institutions and businesses.
50	Ullah et al., (2014) and the Pilot Study	A moral responsibility enhancement affected by Islamic principles.
51	Hackston & Milne (1996)	Maintenance of the balance of the environment.
52	Akrout & Othman (2013) and the Pilot Study	Protect & enhance future generation's well-being.
53	Islam & Deegan (2010); Hackston & Milne (1996)	Designing facilities which are harmonious with the surrounding environment.
54	Hackston & Milne (1996) and the Pilot Study	Contribution to beautify the environment regarding art/sculptures or cash.
55	Hackston & Milne (1996)	Undertaking studies of environmental impact to monitoring firm's impact on the surrounding environment.

4.3.3.3 Calculation of Disclosure Index

Regarding calculating the volume of CED, both unweighted and weighted disclosure indices could be used. In the unweighted disclosure index, all items take equal scores, according to items' existence in the reports (Cooke, 1989). An item will score one if it existed in the analysed document and will take zero if it was not (Cooke, 1992; Depoers, 2000; Inchausti, 1997; Meek, Roberts, & Gray, 1995). The key theme of the unweighted disclosure index is that all the disclosed items in the index are deemed similarly valuable to the average users (Ullah et al., 2014).

On the other hand, the weighted disclosure index has been used in previous literature (Buzby, 1975; Cerf, 1961; Wallace, 1988) to investigate corporate disclosure. Crucially, the weighted disclosure index is built on the idea of the different assessment of each item by various groups of users (Botosan, 1997). In the analysis procedure, therefore, each disclosed item in the annual report takes a different score, either through a survey or by the investigator himself who estimates the information type (qualitative or quantitative) in giving weights to the different items in the index (Richardson & Welker, 2001). For instance, Buzby (1975) utilised a 5-point Likert scale to determine the significance of the selected items by sampling financial analysts.

Furthermore, it is valuable to send a questionnaire included a list of items to a certain sample of users, asking them to assess the significance of each item (Buzby, 1975; Firth, 1979; McNally, Eng, & Hasseldine, 1982; Stanga, 1976). Arguably, previous empirical evidence (Archambault & Archambault, 2003; Cooke, 1991; Cooke, 1989; Cooke, 1992) has supported using the unweighted disclosure index, suggesting that each item has equal significance. The main debate on this issue was raised by Cooke (1989, p 115) who advocated that:

> 'One user class would assign different weights to the certain item than another class' and that 'the subjective weights of the group(s) of the user(s) will average each other out'.

Others (e.g., Cerf, 1961; Singhvi & Desai, 1971) preferred to use a weighted disclosure index, where items could be determined subjectively or taken from previous literature. However, in the case of annual reports "*general purpose reports*", which issued to face different groups' requirements, the score of each disclosed item is regarded equally significant to all users, with no particular preference for a particular user. Accordingly, the use of unweighted disclosure index is regarded an appropriate technique for the current study that does not take into consideration any particular group(s) of the user(s). Moreover, any weighted disclosure index might mislead if the significance of any disclosure item differs from a firm to another, industry to another, and period to another (Spero, 1979). Arguably, the schemes of the different weighting of disclosure items are not as significant as items selected for the reason that companies that demonstrate positive disclosure practices might disclose various items and given high scores irrespective of the weights of items (Cooke, 1989; Robbins & Austin, 1986).

Furthermore, a mixed disclosure index that includes both weighted and unweighted items has been previously used in the literature (Choi, 1973; Chow & Wong-Boren, 1987) and provided mixed findings. Previous experience also documented that the use of unweighted and weighted scores for the disclosed items in company's annual reports might make slight or even no difference to the results (Robbins & Austin, 1986). By contrast, some others (Naser & Nuseibeh, 2003) mentioned substantial differences between the results gained from unweighted and weighted items.

Cooke (1992) has also supported the use of the dichotomous process in analysing the content of annual reports where it offers a realistic assessment of CED practices regardless presenting a judgemental component into the scoring process. An unweighted version reduces the subjectivity involved in assigning relative importance to individual items and, perhaps, the problem of different researchers are weighing items differently (Ahmed & Courtis, 1999).). It has become the norm in

annual report studies (also evident in Table 3.4, p75). Consequently, the total environmental disclosure index (EDI) for a particular company is calculated as follows[7]:

$$EDI = \frac{\sum_{i=1}^{n} di}{n}$$

Where,

d = 1 if item *di* is disclosed
0 = if the item is not disclosed
n = number of items
EDI = environmental disclosure index

4.3.4 Reliability and Validity

The term of reliability mentions the extent to which a measuring process offers similar findings on repeated trials (Neuendorf, 2002). As such, each researcher seeks to maximise the reliability of his results through minimising the bias and error in his study (Yin, 1994; Neuman, 2006). Particularly, three kinds of reliability have been determined for the technique of content analysis are reproducibility, accuracy and stability (Krippendorff, 2004) that could be presented in Table 4.3 as follows:

Table 4.3: Three Types of Content Analysis Reliability.

Type of reliability	Reliability Designs	Errors assessed	Relative strength
Stability	Test-retest	Inter-observer inconsistencies	Weakest
Reproducibility	Test-test	Inter-observer inconsistencies and Intra-observer disagreements	
Accuracy	Test-standard	Inter-observer inconsistencies; Intra-observer disagreements and systematic deviations from a norm	Strongest

Source: Krippendorff (1980, p 131).

Stability mentions a judge's ability to code the data in the same way over time, and it is considered the weakest test of reliability (Krippendorff, 2004). Particularly, stability test measures whether specific items categorised by the same investigator at various points of time remain stable (reliability across time) (Krippendorff, 1980).

Reproducibility[8], sometimes mentioned as equivalence reliability (Neuman, 2003) or inter-coder reliability (Milne & Adler, 1999), indicates the extent to which the producers of content categorisation

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[7] Appendix 1 shows a spread sheet of coded environmental items for the first five sampled firms within the sub-index A in alphabetical order

[8] The reproducibility in the current study means that; the researcher will be able to re code the annual reports several times to confirm the findings (Krippendorff, 1980).

are providing similar findings when similar tests are coded by different coders (multiple coding) (Weber, 1988). Arguably, the coding conflicts usually arise from cognitive differences between the errors of random recording, or from coders' ambiguous coding instructions (Weber, 1994).

The accuracy kind of reliability, furthermore, includes evaluating the coding performance of the investigators against a predetermined standard, for instance, a standard known from earlier studies or set by a panel of experts (Milne & Adler, 1999).

Three approaches have been identified to escalate the reliability in analysing and recording data (Guthrie, Petty, & Yongvanich, 2004): firstly, choosing the categories of disclosure according to the relevant literature of CED, and defining them clearly; secondly, making a reliable instrument of coding, and thirdly, training investigators or coders and demonstrating that coding established on a pilot study sample reached a satisfactory level.

In the current study, four primary methods articulated in previous literature were adopted to address the reliability of the EDI (Beattie & Thomson, 2007; Hooks & van Staden, 2011; Ntim, 2016). The first method is the employment of various coders in the measurement of CED who have represented little errors/discrepancies, which were tackled through additional testing amongst coders (reproducibility). Secondly, to make sure that reliability and consistency are achieved, a pilot study has been conducted on 20 annual reports from Tadawul (Saudi stock market) including both sectors (include five large and five small sized firms each) which were independently coded by two investigators; each one coded ten annual reports issued in 2014. Generally, no main changes arose with the agreement coefficient between both investigators adequately high at 0.79, observing that the adequate level ranges between 0.70 and 0.80 (Milne & Adler, 1999; Beattie & Thomson, 2007). Third, Cronbach's α test has been conducted which is considered to be one of the most extensively used indexes to assess the reliability of data (Bland & Altman, 1997). For scales or tests which are employed to compare between the different groups (five sub-indices in the current study) Alpha values of 0.7 to 0.8 are considered as satisfactory (Bland & Altman, 1997). In the present study, α value is 0.79 which indicates an adequate level of reliability of the used EDI. Fourth, the environmental categories of the disclosure index were clearly defined and adopted based on the relevant literature of CED practices in both developed and developing countries, as has been discussed in subsection 4.3.3.2.

Additionally, the research instrument should be valid and measures what the investigator aims to measure (Weber, 1985). Krippendorff (1980) has defined validity (semantic validity) as the extent to which people agree that the items placed in the category have the same implications. This definition

indicates that the agreement between the author and other coders on text categorisation could be used to offer a sign that the process applied in the categorisation is valid. Moreover, the validity of categorisation procedure could be improved based on the fact that the researcher draws deeply on dimensions and categories that have already been clearly defined in the CED literature (see Table 4.4).

Finally, to deal with the applicability of items that included in the developed disclosure index in the present study, a pilot study has been conducted on 20 annual reports from Tadawul (Saudi stock market) covering both groups of sectors (include five large and five small sized firms each) in 2010 and 2014. The results of this pilot study indicate, in 2010, the total number of potential disclosure items is 55. However, these 55 items might not be reported by all firms since some of these environmental items might not be relevant to a specific industry. Thus, only 50 environmental items are found to be applicable or relevant in 2010. The percentage of applicable environmental items is representative of 90.9% in 2010. This percentage then has increased to 98.2% in 2014 (54 out 55 items) in Saudi Arabia. In other words, even if the items of environmental information might not be regarded a comprehensive list of items, it is deemed sufficient to cover the maximum potential number of environmental items that might exist in corporate annual reports in the MENA region.

4.4 Sample Selection

The sample of this study was drawn from firms listed on nine Arab MENA stock exchanges. The Arab MENA countries selected for the study were Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Tunisia and UAE because they have the largest and most active stock exchanges in the region and sufficient data for the empirical analysis. Altogether, these nine countries represent over 85% of both Arab MENA GDP and stock exchanges capitalisation. The sample of countries thus covered all the individual countries mentioned in Panels B and D in Table 3.4 (see literature review chapter, p75), except for Libya, which has been suffering severe internal political disruption for several years.

The population of companies for the study comprised of a total of 1195 firms officially listed on the main stock exchanges in the nine countries as at 12th February 2015. Financial firms were excluded because this sector has largely indirect effects on the environment (Thompson & Cowton, 2004) and is subject to heavier and different regulation compared to other sectors (Guest, 2009). This exclusion is in line with much previous literature (e.g., Haniffa & Hudaib, 2006; Ntim, 2009), including many of the studies listed in Table 3.4.[9] The remaining firms were classified into industrial and services

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[9] Where the CSD of financial firms is analysed, it is sometimes in separate, specialist studies (e.g. Amine et al., 2013).

groups,[10] since the nature of the sector can have a significant influence on CED; as can firm size (e.g., Beattie et al., 2004; Cerf, 1961; Hassan & Marston, 2010; Lang & Lundholm, 1993; Leuz & Verrecchia, 2000; Neu, Warsame, & Pedwell, 1998; Ntim, 2016). Therefore, in line with previous studies, the five largest and the five smallest firms (based on the average of their Total Assets over a five-year method) within each sector in each of the nine MENA countries were selected (see panels *B* and *C* of Table 4.6) (see Ntim, 2016). It was decided to examine five years' annual reports to discern any recent trends, in line with the more lengthy studies in Table 3.4. Thus, the final sample consisted of 180 listed companies (20 per country) over a five-year period (900 annual reports) and used 55 environmental items, resulting in an overall total of 49500 observations. This is considerably larger than any of the studies listed in Table 3.4 (p75).

The composition of the final sample and its relationship to the overall population are shown in Table 4.4. The annual reports for each company were obtained from the websites of the nine stock markets, from companies' websites, and supplemented with the Perfect Information and Trade Mubasher databases.

Table 4.4: The Sampling Criteria

Panel A: Industrial composition of Listed firms in 9 Arab MENA Countries.	Number In each Industry		Population%
Industrial sectors	386		32.30%
Service sectors	492		41.17%
Financial sectors	317		26.53%
Total population	1195		100%
Financial sectors (excluded)	(317)		(26.53%)
Total sampled firms	878		73.47%
Panel B: The targeted 20 stratified sampled firms at the country level.	**INDUS**	**SERV**	**Total Firms**
Largest firms[a]	5	5	10
Smallest firms	5	5	10
Total stratified sampled firms each country	10	10	20
Panel C: The targeted 180 stratified sampled firms at MENA level.	**INDUS**	**SERV**	**Total Firms**
Largest firms	45	45	90
Smallest firms	45	45	90
Total stratified sampled firms each country	90	90	**180**

a   Based on average of total assets over a five-year period

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[10] The Industrial Group of sectors includes Oil and Gas, glass and ceramic industries, textiles, pharmaceutical and medical, leathers and clothing, tobacco and cigarettes, chemical, paper and cardboard, printing and packaging, food and beverages, mining and extraction, engineering and construction and electrical. The Service Group of sectors includes hotels and tourism, health care, educational, transportation, media, utilities, real estate and resorts and technology and communications.

4.1.1 The Criteria for Selecting the Sample for the Study

Each firm to be included in the sample should meet the following criteria; **(1)** five years annual reports from 2010 to 2014 and **(2)** its corresponding five-year stock market and financial information must be available. Using five years' panel data ensured that enough series data are gained to permit conducting suggested statistical and robustness analysis (Ntim, 2009). The selection of these criteria could be justified as follows. Firstly**,** the criteria assist in meeting the requirements for a balanced panel data analysis (Huang & Kung, 2010; Ntim, 2016; Yermack, 1996). In this sense, Gujarati (2003) asserts that there are several advantages could be obtained by using panel data through combining time series of cross-sectional observations such as less collinearity among variables, more asymptotic efficiency and more degrees of freedom. Secondly, this criterion is a timely response to recent calls from CSR researchers to use the panel data to reduce such inherent problems in statistical techniques (Larcker, Richardson, & Tuna, 2007).

4.4.2 Reasons for Selecting the Targeted Sample of this Study

The selection of the firms based on firm size and industry has been motivated by many practical, and theoretical reasons (Ntim, 2009). First, there are well-established, and a considerable empirical and theoretical literature regarding accounting disclosure proposes that the size and sector are positively associated with corporate disclosure practices (Beattie, McInnes, & Fearnley, 2004; Cerf, 1961; Hassan & Marston, 2010; Lang & Lundholm, 1993; Verrecchia, 2001). Second, larger firms are expected to provide more disclosure than smaller companies as they are facing the greater public and governmental pressures (Lang & Lundholm, 1993); thus, firm size must be considered in CED measurement. Third, firms working in different sectors tend to have various levels of disclosure practices, and this matter could be attributed to the disclosure practices of a company that leads that certain sector (Marston, 2003; Peter Oyelere et al., 2003). Therefore, firms in the same group of sectors are more likely to provide a comparable level of disclosure practices (Amran & Haniffa, 2011).

The criteria are attributable to achieving a balance between larger and smaller firms operating in different sectors which assist in attaining an adequate cross-sectional variation in CED practices and thus enhance the generalisation of study findings (Ntim, 2009). Given that size has been shown to be associated with disclosure in the past, it is believed that stratifying the sample of the current study into larger and smaller (listed) companies is prudent (Lang & Lundholm, 1993). This study uses the same method as Ntim (2016) that investigated how corporate governance could moderate the relationship between CSR disclosure and firm value using a stratified sample of 100 listed firms on five stock markets in sub-Sahara Africa where the five largest and the five smallest firms within each

sector were selected to end up with 20 companies each country. Notably, the smallest industrial firms still disclosed, on average, at two-thirds of the rate of the largest service firms (see Table 5.8, p120). Therefore, the sampling method adopted in this study will not lead to bias when comparing countries or, in particular, when analysing a trend – which is the focus of the analysis in the first piece of work in this thesis. Additionally, the sample of this study covers 20.5% of the overall population of non-financial listed companies on the stock exchanges in the selected nine MENA countries.

4.5 The Research Variables and their Measurement

This section identifies and operationally defines the dependent, independent and control variables that have been used in this study.

4.5.1 Dependent Variable

The dependent variable in this study is the total environmental disclosure in the annual reports that scored by listed firms in nine Arab MENA emerging markets. As has been mentioned earlier in this chapter, the Environmental Disclosure Index (EDI) was constructed based on both previous literature (Akrout & Othman, 2013; Gray et al., 1995; Hackston & Milne, 1996; Hossain et al., 2006; Islam & Deegan, 2010; Toppinen et al., 2012; Ullah et al., 2014; Wiseman, 1982) and the Global Reporting Initiative (GRI) (2006; 2011). Crucially, the main EDI has been categorised into five sub-indices namely environmental policy, environmental pollution, environmental energy, environmental financial and ecological other related items. The measurement of the EDI and its sub-indices was built upon an unweighted content analysis technique and deemed to be continuous variables. In this sense, Hackston & Milne (1996) and Mohd Ghazali (2007) stated that social and environmental disclosure seems to be considered as a continuous variable using a disclosure index instrument.

4.5.2 Independent Variables

The second piece of work in the current study is related to investigating the variability in CED practices in the region by using multilevel variables employed from an institutional perspective. The independent variables are classified into two primary groups are continuous variables and dummies. The continuous variables could also be categorised into two main groups, firm-specific characteristics (firm size, profitability and leverage) and country-level governance indicators (voice and accountability, government effectiveness and control of corruption). The dummies are sector type, business culture, auditor type and sub-region (business environment). The next subsection discusses the different groups of independent variables.

4.5.2.1 Continuous Independent Variables

These variables are firm size, profitability, leverage, voice and accountability, government effectiveness and control of corruption. The following subsections explain these variables based on previous empirical literature and from an institutional perspective.

4.5.2.1.1 Firm Size

Prior evidence (Alanezi, 2009; Alarussi & Selamat, 2009; Almilia, 2009; Al-Moghaiwli, 2009; Al-Motrafi, 2008; Andrew et al., 1989; Baldini, Maso, Liberatore, & Mazzi, 2016; Barako & Brown, 2008; Barako et al., 2006a; Bonson & Escobar, 2006; Brennan & Hourigan, 1999b; Chan & Wickramasinghe, 2006; Cormier & Magnan, 1999; Cowen, Ferreri, & Parker, 1987; Debreceny & Rahman, 2005; Desoky & Mousa, 2009; Despina & Demetrios, 2009; Elsayed & Hoque, 2010; Ettredge, Richardson, & Scholz, 2002; Fifka, 2013; Gonçalves & Lopes, 2014; Momany & Al-Shorman, 2006; Ortas & Gallego-Alvarez, 2015; Oyelere & Kuruppu, 2012; Peter Oyelere et al., 2003; Pirchegger & Wagenhofer, 1999; Scaltrito & Vrontis, 2016; Teoh & Thong, 1984; Trotman & Bradley, 1981) indicated a positive significant association between corporate disclosure and firm size. One possible explanation for this relationship is that large firms have a larger influence on the community (Haniffa & Cooke, 2005). Larger firms are also subject to more inspection by several groups in society and thus will face greater pressure to provide environmental information to legitimise their activities (Cormier & Magnan, 2002; Cowen et al., 1987).

Various measurements have been applied to firm size in the previous literature such as total assets, the number of employees, market capitalisation, and sales (Abdelsalam & Weetman, 2007). However, there are no particular theoretical reasons for selecting one measure over another (Marston, 2003). Total Assets (TA) was the most used method as a proxy for firm size in the earlier voluntary disclosure studies (Alanezi, 2009; Al-Moghaiwli, 2009; Aly et al., 2010; Ntim, 2016; Oyelere & Kuruppu, 2012). As such, the TA is selected to be used as a proxy for firm size to investigate the relationship between CED practices and firm size.

4.5.2.1.2 Profitability

The variability in CED practices may be explained by firms' profitability. Managers in profitable companies are encouraged to provide more CED practices in their annual reports in order to enhance their remuneration and to maintain their reputation (Singhvi & Desai, 1971). Prior empirical literature (Agyei-Mensah, 2012; Al-Moghaiwli, 2009; Aly et al., 2010; Celik, Ecer, & Karabacak, 2006; Cowen et al., 1987; Fekete, Tudor, & Mutiu, 2009; Hannan & Freeman, 1977; McGuire, Sundgren, & Schneeweis, 1988; Roberts, 1991) pointed out a significant positive relationship between CED and

profitability, and concluded that the most profitable firms are large sized and tended to provide better disclosure practices. By contrast, others (Artiach, Lee, Nelson, & Walker, 2010; Chakravarthy, 1986; Chiu & Wang, 2015; Crifo & Forget, 2015; Desoky & Mousa, 2009; Dhaliwal, Radhakrishnan, & Tsang, 2012; Elsayed & Hoque, 2010; Purushothaman & Tower, 2000; Shane & Spicer, 1983; Ullmann, 1985) found a negative or insignificant relationship between profitability and environmental disclosure. This negativity could be associative of attempts by non-profitable companies to disseminate their environmental information to obtain additional funds and to prevent possible failures which may be disadvantageous to their stakeholders in future (Crifo & Forget, 2015). Collectively, the association between environmental disclosure and profitability is documented on contradictory theoretical underpinnings that previous evidence has not succeeded to clarify. Therefore, this study seeks to efficiently investigate this relationship at the regional level from an institutional perspective.

In the previous literature, profitability has been measured using various methods. Mainly, Return on Assets (ROA) which counted by net profit divided by total assets is regarded the most popular measure of profitability in prior studies (Aupperle, Carroll, & Hatfield, 1985; Hackston & Milne, 1996; Haniffa & Cooke, 2005; Khan, Muttakin, & Siddiqui, 2013; Mangos & Lewis, 1995). However, other measures that have been used for profitability are return on equity (ROE), annual returns, net income, earnings per share (EPS) and return on sales (ROS) (Aly et al., 2010; Aras, Aybars, & Kutlu, 2010; Balabanis, Phillips, & Lyall, 1998; Barako et al., 2006; Cowen et al., 1987; Hossain, Perera, & Rahman, 1995; Marston, 2003; Marston & Polei, 2004; Mulyadi & Anwar, 2012). ROA, nevertheless, is the most used financial ratio to measure the association between profitability and corporate disclosure practices (Momany & Al-Shorman, 2006). Arguably, the limitation of using profitability without considering the size could be addressed by using ROA (Al-Tuwaijri, Christensen, & Hughes, 2004). Also, empirical evidence has been conducted in the region shows a significant positive association between the profitability using ROA and corporate disclosure (Alanezi, 2009; Al-Moghaiwli, 2009; Al-Motrafi, 2008; Desoky & Mousa, 2009; Momany & Al-Shorman, 2006; Oyelere & Kuruppu, 2012). Accordingly, ROA is used to measure profitability in this study.

4.5.2.1.3 Leverage

Leverage is another element that could influence the level of CED since firms' stakeholders take their decisions that related to evaluating firms' credit rating and financial standing based on the information provided in firms' annual reports (Brammer & Pavelin, 2006; Cormier & Magnan, 2002). Therefore, managers are motivated to increase their disclosure practices to gain stakeholders' support as well as to reduce the legitimacy risks within a given community.

The empirical literature offers mixed findings regarding the association between leverage and corporate disclosure. Whereas some studies (Alanezi, 2009; Alarussi & Selamat, 2009; Al-Shammari, Brown, & Tarca, 2008; Barako & Brown, 2008; Chan & Wickramasinghe, 2006; Clarkson, Li, & Richardson, 2008; Reverte, 2009; Richardson & Welker, 2001; Turrent & Ariza, 2012) revealed a negatively significant association between leverage and CED practices, others (Roberts, 1992; Joshi & Al-Modhaki, 2003; Momany & Al-Shorman, 2006; Prabowo, 2006; Elsayed, 2010; Momany & Pillai, 2012) stated a positive and significant relationship (Ahmed & Courtis, 1999; Brammer & Pavelin, 2008; Elsayed & Hoque, 2010; Momany & Al-Shorman, 2006; Roberts, 1991; Roberts, 1992).

Leverage could be measured by the ratio of Debt to Total Assets (DOA) or the ratio of Debt on Equity (total debt/ shareholder equity) (DOE) (Heravi, & Xiao, 2005). For example, Oyelere et al. (2003) characterised leverage by DOE, while Xiao et al. (2004) have employed DOA as a proxy to measure the relationship between leverage and corporate disclosure. Even though there are no specific theoretical reasons to select a particular proxy for leverage in order to examine its association with CED, this study employs the commonly used measurement in previous disclosure studies which is the ratio of debt to total assets (DOA) as a proxy for leverage (Akrout & Othman, 2013; Almilia, 2009; Aly et al., 2010; Barako et al., 2006; Elsayed & Hoque, 2010; Gao, Heravi, & Xiao, 2005; Xiao, Yang, & Chow, 2004).

4.5.2.1.4 Country-level Governance

Each corporation works within a structure attributed to a state's special regulations and the different cultural, social, and individual behavioural idiosyncratic connected to the country (Baldini et al., 2016). Since the 1990s, studies have investigated the effects of country-specific pressures on non-financial disclosure (Aguilera & Jackson, 2003; Campbell, 2007; Freedman & Stagliano, 2008). Companies embedded in different country-level institutions varied significantly in their financial and non-financial disclosures (Ioannou & Serafeim, 2012). Mainly, national governments and regulators concentrate on CED practices in order to make a balance between public and private businesses' interests. Internationally, there is an increasing number of regulators are looking over the governmental arrangements of the companies to make sure that corporate operations are aligned with comprehensive societal interests (Ioannou & Serafeim, 2012). These efforts have encouraged governments to establish more initiatives related to new rules for environmental protection; therefore creating new regulations and policies on CED practices (Talbot & Boiral, 2015). Also, the demand for CED particularly results from market investors. For example, Solomon and Solomon (2006) point

out that institutional analysts and investors who were previously unconcerned about CED have recently turned their consideration to environmental information, creating pressure on companies for sustainability reporting.

Companies' disclosure practices are associative of wider social structures and institutional pressures (e.g., the existence of non-governmental organisations and the public and private rules) that monitor firms' activities and their environmental behaviour (Campbell, 2007). These institutional pressures and societal structures highlight the significance of societal acceptance in confirming a firm's survival (Singh, House, & Tucker, 1986). In other words, the survival of a company relies on whether that company performs in socially acceptable manners or not (Beelitz & Merkl-Davies, 2012). Accordingly, the association between corporate disclosure practices and country-level governance could be explained by both mimetic and coercive perspective.

Although previous research has mainly concentrated on examining firm-level determinants of social and environmental disclosures from an institutional perspective (Branco & Rodrigues, 2008; Ntim, 2016; Reverte, 2009), fewer studies have employed institutional theory to explain country-level determinants of social and environmental disclosure practices (Baldini et al., 2016). This means that there is a dearth of understanding concerning how an institutional environment affects CED practices at both firm and state scales. Country-level governance indicators can have substantial influences on corporate disclosures (Kaufmann et al., 2011). Drawing on recent empirical evidence (e.g., Ioannou & Serafeim, 2012; Baldini et al., 2016), this study investigates the key national-level determinants of CED using three indicators are Voice and Accountability (V&A), government effectiveness (GE), and Control of Corruption (CC).

Concerning the measurement, the scores of national-level governance indicators of V&A, GE, and CC are based on Kaufmann et al. (2011) in years from 2010 to 2014. A higher score of each indicator means better country governance in a country (see World Bank, 2016). For instance, a higher score of V&A means better Voice and Accountability practices in that country. Similarly, a higher score of CC means less corruption in that country. The next subsection discusses the dummies that applied in the present study to explain the variations in CED practices in the MENA region.

4.5.2.2 Dummy Independent Variables

A number of dummy variables are independently employed in the present study based on the previous literature and specific characteristics of the context of study in order to explain and understand the variability in CED practices in the MENA region from a different firm, country and regional levels. These are sector type, business culture, the kind of auditor and the sub-region or business

environment. The next subsection explains these variables in relation to both previous empirical evidence and theoretical underpinning.

4.5.2.2.1 Type of Sector

The impact of sector type on CED practices has been previously investigated by studies conducted in different environments (Ghazali, 2007; Haniffa & Cooke, 2002). The previous evidence has employed different numbers of sectors and offered mixed results. While some studies such as Fekete et al. (2009); Homayoun & Abdul Rahman (2010) amongst others have documented a weak or negative association between sector type and corporate disclosure, others (e.g. Barako et al., 2006; Al-Shammari, 2007; Elsayed, 2010) reported a positive relationship. Arguably, the various levels of environmental disclosure of companies working in different sectors could be attributed to the disclosures of the companies that lead each sector (Oyelere et al., 2003; Marston, 2003); and thus, firms in the same sector are more likely to follow that leading company as a mimetic pressure, reflecting a society of practice. In this context, Amran & Haniffa (2011) assert that firms operating in a similar sector could adopt similar disclosure practices just to be legitimate and acceptable in that sector. Another side of this argument indicates that companies in environmentally sensitive sectors are facing greater pressure from stakeholders to disclose their environmental information that should reflect their responsibility and performance in order to protect the environment, indicative of coercive pressure.

4.5.2.2.2 Business Culture

The Arab MENA countries were marked by either a strong connection with the US and the UK (Anglo-American) or with France. The States of Arabian Gulf (e.g. Saudi Arabia, Kuwait, Qatar, etc.) further to Jordan and Egypt preserve advantaged economic relationships with the UK and the US. On the other hand, the countries in the Arab MENA region that were colonised by France (e.g. Morocco, Algeria, Tunisia, Lebanon and Syria) have advantaged economic associations with France. Therefore, the culture of business inherited from former colonialists and current main business partners might be an important influence on the level of CED in the Arab MENA countries (Akrout & Ben Othman, 2013). Notably, the expectations and requirements of corporate disclosure in European countries such as France are less than them in the Anglo-American countries (Saudagaran & Biddle, 1992). In this sense, Ben Othman & Zeghal (2010) studied the disclosure determinants and transparency among MENA firms. Their finding tends to support that companies operating in countries economically tied to British business culture are more likely to have higher levels of disclosure and transparency than those that are linked to the French business culture. From an institutional perspective, cultural values play a major role in influencing the expectations of professionals who will finally adopt such CED

practices, reflective of a normative pressure (Deegan, 2009). Also, companies with similar business culture are more likely to have comparable levels of environmental reporting in the region indicating a mimetic pressure (Ali & Rizwan, 2013).

4.5.2.2.3 Type of Auditor

The auditing type has often been divided into two main types which are firms were audited by one of the Big 4 auditors[11], and others have been verified by Non-Big 4 Audit companies (Ntim, 2009). Big four audit companies are widely spread across the world, whereas the majority of other small audit companies are operating domestically (Alsaeed, 2006). Arguably, the type of auditor has a substantial impact on firm's disclosure practices bringing such isomorphic normative and mimetic pressures to a certain organisational field (Al-Mulhem, 1997). Thus, a company that has been audited by one of the Big 4 auditing firms is more likely to deliver more voluntary CED practices than other companies that are not (Hung & Kung, 2010). Collectively, the big 4 auditors are better prepared and equipped than others and tended to ask for environmental information to avoid costly litigation and to maintain their reputation (Xiao et al., 2004).

Previous studies have offered mixed results regarding the association between corporate disclosures and the type of auditor (Big 4 or not). For instance, empirical evidence (Alsaeed, 2006; Camfferman & Cooke, 2002; Craswell & Taylor, 1992; Huang & Kung, 2010; Raffournier, 1995) found a significantly positive association whereas, others stated a negative and significant relationship between the level of corporate disclosures and the type of auditor (Agyei-Mensah & Oteng-Ababio, 2012; Wallace & Naser, 1996).

4.5.2.2.4 Gulf Co-operation Council (GCC)

The sub-region may clarify the variability in CED across the countries within the Arab MENA region, indicative of different business environments. The Arab MENA region could be classified into two main sub-regions; Gulf Cooperation Council (GCC) countries (i.e., Kuwait, Oman, Qatar, Saudi, and UAE) and the other Middle Eastern and North African countries from the non-GCC region (i.e., Egypt, Jordon, Morocco, and Tunisia). From an institutional perspective, mimetic pressures could be theoretically employed to explain the variations in CED practices between the two Arab MENA sub-regions. Particularly, firms working in each sub-region might be affected by their shared business environment to follow related corporate disclosures reflecting a society of practices (DiMaggio & Powell, 1983). This study has an excellent opportunity to investigate the effect of sub-region (GCC or not) on CED practices provided by listed firms in the MENA region. Therefore, the researcher

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[11] The Big 4 audit companies are; PWC, EY, Deloitte, Touche Tohmatsu and KPMG

assumes a significant association between GCC and CED practices. Two reasons could justify this assumption. First, prior literature has shown a significant relationship between the sub-region and corporate disclosure (e.g. Eltkhtash, 2013). Second, the current study involves two different sub-regions that are varying economically and politically (GCC and not). Based on the fact that GCC countries are more economically and politically stable than the non-GCC countries (better business environment), this study assumes a significant positive relationship between GCC and CED (Ararat, 2008). Table 4.6 presented the research variables on the basis of previous literature and employed from an institutional theory perspective:

Table 4.5: The Research Variables from an Institutional Perspective

The variable	Empirical research	Institutional perspective
Panel A: *Firm-specific characteristics*		
Firm size	The pressure on corporations to provide CED practices in their annual reports is greater than on smaller ones ((Aerts, Cormier, & Magnan, 2006; Al-Arussi et al., 2009).	Theoretically, similarly, sized firms tend to have comparable disclosures indicative of mimetic pressures (Hannan & Freeman, 1977). Large enterprises face greater pressure and disclose environmental information because of coercive pressures (Guerreio et al., 2012).
Profitability	Profitability is positively associated with CED (e.g. Zheng et al., 2009; Akrout & Ben Othman, 2013).	Profitable firms could be followed by other enterprises in the same industry to obtain their legitimacy in a given context, and this could be explained by mimetic pressures (Haveman, 1993).
Leverage	Leveraged firms provide better CED practices (Roberts, 1992; Naser et al.,2006)	The request for environmental information by powerful stakeholders could lead to a coercive isomorphism and result in more pressure on firms to have more CED practices (Eltkhtash, 2013).
The type of audit	The literature offers mixed results regarding the relationship between CED and auditor type (e.g. Craswell & Taylor, 1992; Camfferman & Cooke, 2002; Hung & Kung, 2010; Alali & Romero, 2012).	The type of auditor has an association with corporate disclosure, bringing a kind of normative pressure to a certain organisational field (Al-Mulhem, 1997).
Panel B: *Country-specific characteristics*		
Country-level Governance: V&A, GE, and CC.	Companies embedded in different country-level institutions demonstrate various environmental disclosures that may be associated with characteristic institutional, cultural, political, and factors such as country-level governance (Ioannou & Serafeim, 2012).	Companies working in countries that have similar indicators of state governance lead to similar disclosure practices (Beltratti & Stulz, 2012).
Sector	Firms operating in environmentally sensitive sectors are more likely to provide more CED practices in their annual reports (Haniffa & Cooke, 2002; Thompson & Zarina, 2004; Amran & Haniffa, 2011; Marston, 2003; Intridis, 2013; Peters & Romi, 2013).	Companies working in the same sector could adopt similar CED practices to be legitimate and acceptable, and this could be explained by coercive and mimetic isomorphic pressures (Amran & Haniffa, 2011).
Panel C: *Region-specific characteristics*		
Business culture	Firms operating in countries economically tied to British business culture are more likely to have a higher level of disclosures than those working in countries linked to French business culture (Saudagaran & Biddle, 1992; Ben Othman & Zeghal, 2010; Akrout & Ben Othman, 2013).	Countries that have a similar business culture are more likely to have a comparable level of disclosure which reflects both normative and mimetic isomorphic pressures (Deegan, 2009; Othman & Zeghal, 2010; Ali & Rizwan, 2013).
Business Environment (Sub-regions)	Previous literature assumes a significant association between GCC and corporate disclosures (Eltkhtash, 2013).	Mimetic pressures could explain the variations in CED practices between the two Arab MENA sub-regions. Particularly, firms working in each sub-region might be affected by their shared environment to follow related corporate disclosures reflecting a society of practices (Eltkhtash, 2013).

4.5.2.3. The Control Variables

The use of control variables might address the existence of endogeneity problems (Black, Love, & Rachinsky, 2006; Larcker & Rusticus, 2010). In the current study, to decrease the potential endogeneity and bias of the omitted variable, a set of control variables, including the log of Gross Domestic Product (GDP) and five Years Dummies (YD) from 2010 to 2014, is considered in the procedure of data analysis. Additionally, it is worth noticing that these control variables were selected according to previous voluntary disclosure literature, as they are unavoidably restricted to the level that they could not be exhaustive (Larcker & Rusticus, 2010). There are other variables have a potential effect on CED practices could not be involved in the research model due to various reasons, such as the lack of proper theoretical links and the unavailability of data (Akrout & Othman, 2013). The next sub-sections highlight the two controls that employed for the current study.

4.5.2.3.1 Gross Domestic Product (GDP)

In this multi-country study, the log of GDP of the sampled counties is applied to control for firm size[12] (Baldwin & von Hippel, 2011; Leung, Rispoli, & Chan, 2012). Possibly, the variations in firm size across countries are related to the differences in efficiency, dynamism, maturity and labour productivity gap (Kobe, 1998). As such, GDP has been used to control for firm size in order to eliminate the possible effect of firm size variations that resulted by total assets disparities between countries (Baldwin & von Hippel, 2011; Leung, Rispoli, & Chan, 2012).

4.5.2.3.2 Year Dummies (YD)

Previous empirical evidence also proposes CED change over time across companies (Henry, 2008; Ntim, 2009). For instance, in substantial longitudinal research over a 27 year period between 1974 and 2000, Campbell (2004) has stated that the volume of CED practices was relatively low until the early 1990s, and after that, it has suddenly increased, indicative of a positive relationship between CED practices and the years. Thus, to control for a possible unobserved level of heterogeneity over the five-year period, five dummies (one each for the five years from 2010 to 2014) are counted in the model of the current study.

According to the above argument, Table 4.7 presents the operational definitions of the dependent, independent and control variables as follows.

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[12] For instance, a big sized firm in Tunisia could be counted based on its total assets as a small sized firm in Saudi Arabia. Therefore, GDP has been used to control for firm size across the sampled countries.

Table 4.6: The Operational Definitions of Dependent and Independent Variables.

Variables	Definitions and Coding
*Panel A: Dependent variables (*Environmental Disclosure Index*)*	
EDI	Is the total environmental disclosure score measured by the unweighted environmental disclosure index and weighting criteria presented in section 4.2
Panel B: independent variables-Firm Characteristics	
SIZ	Firm size as measured by the natural log of Total Assets (TA).
PROF	Profitability as measured by the Debt On Assets (DOA).
LEVER	Leverage as measured by the Return On Assets (ROA).
Panel C: Independent Variables- Country-level Governance Indicators	
V&A	Country-level voice and accountability score based on Kaufmann et al. (2011) in years from 2010 to 2014. A higher score of V&A means better Voice and Accountability practices in a country (see World Bank, 2016).
GE	State-level government effectiveness score based on Kaufmann et al. (2010) in years from 2010 to 2014. A higher score of GC means better country governance in a country (see World Bank, 2016).
CC	State-level control of corruption score based on Kaufmann et al. (2010) in years from 2010 to 2014. A higher score of CC means better control of corruption in a given country (see World Bank, 2016).
Panel D: dummy independent variables	
SEC	Type of sector, measured by a dichotomous procedure (0-1). If a company was operating in an industry sector, it scores 1, and it scores 0 if it was operating in the service sectors.
GCC	Gulf Co-operative Council, which reflects the business environment at the regional level, measured by a dichotomous procedure (0-1). If a firm was operating in a GCC country, it takes 1, if not it takes 0.
BUS_CUL	Business culture variable as measured by a dichotomous procedure (0-1). If a was firm operating in a country tied to British culture takes one if it operates in a country tied to French business culture will score 0.
Panel E: control variables	
GDP	The natural log of Gross Domestic Product per capita as measured by Pound.
Year Dummies	Five dummies, one each for the five years from 2010 to 2014.

The following section of this chapter explains how the research variables will be measured in order to conduct the empirical tests.

4.6 Variable Measurement

In the current study, two types of measurement are applied to test the relationship between CED in the MENA region and three kinds of variables namely firm-specific characteristics, country-specific indicators and region-specific pressures; firstly, quantifiable (continuous) variables measured by either financial ratios such as firm size, profitability and leverage or by using a certain quantitative technique such as unweighted disclosure index for CED practices, and secondly, dummy variables measured by a dichotomous technique (one or zero) such as business culture, sector type and business environment (sub-region).

4.6.1 Dependent Variable Measurement

The dependent variable in this study is the level of annual report disclosure of environmental information provided by 180 listed companies in nine Arab MENA emerging markets during a five-

year period. This variable is measured by using an unweighted disclosure index that has been constructed based on both previous literature and global initiatives (see sub-section 4.2.2.3), taking a continuous number reflective of the percentage of the total possible environmental disclosure.

4.6.2 Independent Variables Measurement

These variables are measured by applying two different types of measurements which are financial ratios and dummy codes. The next sub-sections explain those two types of measurements.

4.6.2.1 The Measurement of the Continuous Independent Variables

These variables consist of two groups namely firm-specific characteristics (firm size, profitability and leverage) and country-level indicators (voice and accountability, government effectiveness and control of corruption). The following sub-headings discuss the applied measurements of firm-specific characteristics.

4.6.2.1.1 Company Size

This study adopts the same approach used in previous studies (i.e., Total Assets) as a proxy for the size of listed companies in the Arab MENA emerging markets (Cormier & Magnan, 1999; Leuz & Verrecchia, 2000; Neu et al., 1998). Although the firm size was differently measured in prior studies, such as employing total assets, the number of employees, market capitalisation, and sales, there is no specific theoretical reasons support selecting certain measure over another (Abdelsalam et al., 2007; Marston, 2003). Arguably, TA is the commonly used proxy for firm size in corporate disclosure studies that carried out in the MENA region (Alanezi, 2009; Al-Moghaiwli, 2009; Al-Motrafi, 2008; Momany & Al-Shorman, 2006). Therefore, TA has been adopted to be a proxy for firm size in order to examine the association between CED practices and firm size in the MENA region.

4.6.2.1.2 Profitability

Many ratios have been used to measure the influence of profitability on CED practices in different contexts such as Return on Assets (ROA) and Return on Equity (ROE). ROA is applied in the current study as a proxy for the profitability of listed companies in Arab MENA emerging markets based on previous literature (Berthelot & Cormier, 2003; Momany & Al-Shorman, 2006). Arguably, using ROA as a proxy for profitability addresses the statistical limitations that resulted by adopting other measures that do not consider the size of firms (Sulaiman et al., 2004). Additionally, prior empirical evidence in the MENA region shows a significant positive association between the profitability using ROA and corporate disclosures (Al-Motrafi, 2008; Desoky & Mousa, 2009; Oyelere & Kuruppu, 2012). Accordingly, this study applies ROA to measure the relationship between cost-effectiveness and CED practices.

4.6.2.1.3 Leverage

This study adopts Debt to Assets ratio (DOA) as a proxy for the leverage of listed companies in Arab MENA emerging countries in order to be in line with the previous literature (Akrout & Othman, 2013; Alarussi & Selamat, 2009; Almilia, 2009; Barako et al., 2006; Elsayed & Hoque, 2010; Homayoun & Rahman, 2010; Xiao et al., 2004). The next sub-section discusses the measurement of country-level governance.

4.6.2.2 Country-level Governance

With respect to the measurement of country governance, the scores of national-level governance indicators of V&A, GE, and CC are based on Kaufmann et al. (2011) in years from 2010 to 2014. A higher score of each indicator means better country governance in a country (see World Bank, 2016). For instance, A higher score of CC means less corrupted country. The next subsection discusses the dichotomous process that applied in the current study to measure the dummy scores.

4.6.3 The Measurement of the Dummy Independent Variables

These variables are sector type, business culture, auditor type and business environment (sub-region). The following sub-section explains the measurement of sector type.

4.6.3.1 The Type of Sector

The main focus of this study regarding sector type is on sectors' sensitivity towards the environment. Arguably, firms operating in industrial sectors which considered environmentally sensitive are more likely to disclose environmental information in their annual reports more than firms working in services sectors (Peters & Romi, 2013; Wegener et al., 2013). From a theoretical point of view, companies working in similar sectors are following similar CED approaches, associative of mimetic pressure. Therefore, the industrial companies are given the value = 1, and the service sector will take the value = 0.

4.6.3.2 Business Culture

The Arab MENA region is classified regarding business culture into two broad groups of countries linked to British business culture and French business culture (Akrout & Othman, 2013). If a company is working in a country tied to the British business culture scores one, and it takes 0 if it was connected to the French business culture.

4.6.3.3 The Type of Auditor

Prior literature suggests that firms audited by one of the big 4 auditors are more likely to provide more corporate disclosures (Haniffa & Cooke, 2002; Alanezi, 2009). Therefore, firms audited by one of the big 4 are given the value = 1 and those audited by the non-big 4 take the value = 0.

4.6.3.3 Business Environment (sub-region)

Recent previous literature (i.e., Eltkhtash, 2013) debated that companies working in GCC countries have a higher potential to disclose more voluntary information than others in non-GCC countries, which is reflective of a more stable business environment. Therefore, businesses in GCC countries scores one and others out of GCC take 0. Tables 4.8 illustrates the measurement of the independent variables.

Table 4.7: The Measurement of the Independent Variables

Variable	Code	Proxy	Expected sign
Size	Size	Total assets	+
Profitability	PROF	Return on Assets (ROA)	+
Leverage	LEV	Debt to Assets ratio (DOA)	+
Country-level governance	V&A, GE, and CC	World bank indicator (Kaufmann et al., 2011).	+
Sector type	SEC	Industrial sectors=1 Service sectors=0	+
Business culture	BC	British BUS-CUL= 1 French BUS-CUL= 0	+
The type of audit	BIG 4	Big 4= 1 Non-Big 4 =0	+
Business Environment (sub-region)	GCC	GCC=1 Non-GCC=0	+

The next section of this chapter explains the statistical tests conducted to obtain the empirical results and discusses the additional tests undertaking to check the robustness of the results.

4.7 Statistical Analyses

The second piece of work includes numerical data to achieve the objectives of the study and to answer the research questions. Notably, two kinds of data could be considered in business research; are secondary data and primary data. Secondary data is not provided for specific topics or a particular group of users, where it is available to all researchers and can be gained from different types of sources (Saunders et al., 2011). This kind of data is appropriate for both explanatory and descriptive studies and has the potential for offering valuable insights into a set of questions in a cost-effective manner (Cowton, 1998).

Primary data, on the other hand, is mainly collected for specific research purposes from its key sources (Saunders et al., 2011). This data could be either quantitative (e.g. surveys and questionnaires), or qualitative data such as interviews, observations, case studies.

Secondary data could be classified into two different groups which are quantifiable and dummies or categorical data. Quantifiable[13] data is numerically measured as quantities; and regarded as discrete data, which could be measured accurately; and could be further sub-divided into a continuous variable, which might take any value theoretically (Saunders et al., 2011). Categorical[14] data (including dummies), in contrast, indicates data which could not be measured numerically; however, may be either placed in rank order or categorised into groups (categories); and could be sub-divided into ranked and descriptive (Saunders et al., 2009). Both quantifiable and dummy data will be collected for this study purposes.

After gathering the data, selecting a suitable statistical technique is needed as a next step. Accordingly, a technique of statistical regression could be used for this purpose. However, there are different kinds of regressions, and the decision of the selection among them depends on the type of dependent variable, whether it is categorical or continuous (Mason & Perreault, 1991). As has been discussed in section 4.5.1 of this chapter, the EDI is regarded as a continuous variable measured by using an unweighted disclosure index (Hackston & Milne, 1996; Mohd Ghazali, 2007). Furthermore, this study is applied to two comprehensively defined groups of sectors across nine countries for a five-year period. Therefore, a pooled OLS regression is used to examine the relationship between the dependent and the independent variables in the current study. The following subsection discusses the pooled OLS estimations based on previous literature.

4.7.1 Multivariate Regression Using OLS Estimation Method

Econometric models can address the structure of the panel data collected on environmental disclosure. Crucially, the models of pooled panel data are used in previous literature to exploit the data from two choices: heterogeneity across time periods and heterogeneity across companies (Earnhart, 2004; Ntim, 2009). The investigation of the observed association between certain factors and CED includes an estimation process based on a model of panel data, in which the used measures of the independent variables are expected to influence CED practices which are treated as endogenous variables. Arguably, OLS is an efficient estimation method under three conditions (Wagner, 2005). Firstly, the

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[13] Quantifiable data in this research will be collected for the following variables; EDI, firm size, leverage, profitability, voice and accountability, government effectiveness and control of corruption.

[14] Dummy data will be collected in this study for sector type, business culture, type of auditor and business environment (sub-region).

unit of errors is assumed to be independently and identically distributed; secondly, the errors are supposed to be homoscedastic; and thirdly the propositions of the traditional linear model are achieved.

By contrast, ignoring the structure of the panel data could be problematic for two primary reasons (Johnston & DiNardo, 1997). First, although the model of pooled panel data offers consistent estimations of the regressed coefficients, standard errors may be understated, and hence, significance levels will be over-stated. Second, in comparison with the Generalised Least Squares (GLS) model, the use of OLS model is less likely to cause ineffective estimations of the regressed coefficients.

Following previous studies that applied balanced panel data (e.g., Al-Bassam, Ntim, Opong, & Downs, 2017; Bear, Rahman, & Post, 2010; Chan, Watson, & Woodliff, 2014; Dell'Atti, Trotta, Iannuzzi, & Demaria, 2017; Elghuweel, 2015; Elmagrhi, 2016; Elmagrhi, Ntim & Wang, 2016; Habbash, 2017; Ho & Wong, 2001; Kaymak & Bektas, 2017; Lamb & Butler, 2016; Ntim, 2009; Ntim & Soobaroyen, 2013), particularly those studies that have used a disclosure index as a dependent variable (see Al-Bassam et al., 2017; Chan et al., 2014; Haniffa & Cooke, 2005; Kaymak & Bektas, 2017; Li & Mangena, 2014; Mangena & Tauringana, 2007; Ntim & Soobaroyen, 2013), the empirical examination in this study was conducted using multiple linear regression and employing OLS as estimation method, assuming that all associations are linear, and the data is normally distributed (see chapter six). In this context, Bozec and Bozec (2012) state that the mainstream of studies in the area of corporate social responsibility and governance that used disclosure indexes have generally applied multiple regression using OLS estimation method. Also, to avoid the problems of heteroscedasticity, where errors' discrepancies are varied across the observations, pooled OLS estimation with heteroscedasticity robust standard error is employed to test the relationship between the research variables (White, 1980). As such, the empirical investigation starts with estimating an OLS model in the following form:

Equation (1):

$$EDI_{it} = \alpha_0 + \beta_1 \, SIZE_{it} + \beta_2 \, LEV_{it} + \beta_3 \, PROF_{it} + \beta_4 \, V\&A_{it} + \beta_5 \, GE_{it} + \beta_6 \, CC_{it} + \beta_7 \, SEC_{it}$$
$$+ \beta_8 \, BC_{it} + \beta_9 \, BIg4_{it} + \beta_{10} \, GCC_{it} + \sum_{i=1}^{n} CONTROLS_{it} + \varepsilon_{it}$$

Where EDI is Environmental Disclosure Index. SIZE, LEV, and PROF are firm size, profitability, and leverage, respectively. V&A, GE, and CC are voice and accountability, government effectiveness, and control of corruption, respectively. SEC is the type of sector, BC is business culture, and BIG 4 represents the kind of audit, and finally, GCC is the business environment or the effects of sub-region. The next subsection explains the additional tests employed in the current study.

4.7.2 Robustness Tests

According to Roberts and Whited (2012), the majority of voluntary disclosure literature did not sufficiently tackle the endogeneity problems. This might increase concerns regarding the findings' validity in the main regression model (Wintoki, Linck, & Netter, 2012). Therefore, this study sought to address some of these concerns related to endogeneity using a set of different techniques, as discussed below.

Previous accounting literature indicates three primary causes for endogenous associations between research variables, namely measurement errors, simultaneity, and omitted variables (Moumen, Othman & Hussainey, 2015; Ntim et al., 2013). These three reasons of endogeneity are discussed briefly as follows. The first cause of endogeneities (i.e., measurement error) arises from the inaccurate measurements of primary research variables (Gippel, Smith & Zhu, 2015; Larcker & Rusticus, 2010). Secondly, the simultaneity occurs when the key explanatory variables may perhaps simultaneously influenced by the dependent variable (Gippel et al., 2015; Schultz, Tan & Wals, 2010); for instance, whether a company's EDI leads to enhanced profitability or vice versa. The final cause of endogeneity is variables omission; this type arises when the relationship between two variables or more is actually affected by some omitted (unobserved) variables from the estimated model thus problematic to quantify (Wooldridge, 2013). For instance, Ntim et al. (2013) indicated that other variables such as firm size, sales growth and leverage might affect voluntary corporate disclosure. These sources of endogeneity problems have been taken into consideration in the current study to avoid biased findings.

Following previous literature, the present study applies a set of econometric methods to address endogeneity problems (see Core, Hail & Verd, 2015; Larcker & Rusticus, 2010; Moumen et al., 2015; Ntim et al., 2013). Firstly, the study re-estimates the central OLS model by employing a lagged effect model, a weighted EDI model, a firm-level fixed-effect model and a 2SLS model to tackle concerns linked to the simultaneity problems and omitted variables. Secondly, the study followed recommendations of previous studies and controlled for a number of variables along with the experimental variables to decrease concerns related to omitting variables bias (see Hassanein & Hussainey, 2015; Mallin & Ow-Yong, 2012). Thirdly, time-series and cross-sectional data have been used in this study to control for simultaneity problems (Börsch‑Supan & Köke, 2002). Finally, a comprehensive disclosure index called EDI, comprising 55 environmental items, has been adopted and developed in this study in order to address statistical problems that linked to measurement errors. The main additional tests that employed in the current study to address the endogeneity problems will be discussed in the following sub-sections.

4.7.2.1 Alternative/Weighted Environmental Disclosure Index (WEDI)

The Environmental Disclosure Index (EDI) has been adopted, developed and applied in the current study in order to measure corporate environmental disclosure in annual reports amongst listed companies operating in nine MENA countries. The EDI consists of 55 items that have been divided into five sub-indices, which are not equally weighted, as the number of elements differs across the five sub-indices (categories), leading to varying weights being allocated to each category. The EDI was categorised and weighted as follows. Environmental policy five items (9%); environmental pollution 22 items (40%); environmental energy ten items (18%); environmental financial seven items (13%) and environmental others eleven items (20%). Hence, to check the robustness or sensitivity of the central findings to the weighting of the five sub-indices of the EDI, this study follows the procedure of earlier studies in constructing a weighted index (Elghuweel, 2015; Ntim et al., 2012). An alternative (Weighted) Environmental Disclosure Index (EDI), called WEDI, has been constructed, as equal weights of 20% were awarded to each sub-index as stated in equation 2. The unweighted EDI (the main model) will be replaced by the WEDI as a dependent variable in estimating OLS regression as a robustness test.

Equation (2):

$$WEDI_{it} = \alpha_0 + \beta_1\ SIZE_{it} + \beta_2\ LEV_{it} + \beta_3\ PROF_{it} + \beta_4\ V\&A_{it} + \beta_5\ GE_{it} + \beta_6\ CC_{it} + \beta_7\ SEC_{it} + \beta_8\ BC_{it}$$
$$+ \beta_9\ BIg4_{it} + \beta_{10}\ GCC_{it} + \sum_{i=1}^{n} CONTROLS_{it} + \varepsilon_{it}$$

4.7.2.2 Two-Stage Least Squares (2SLS)

In order to determine the extent to which the primary results are significantly affected by the existence of endogeneity problem, specifically to control for simultaneity, and omitted variables, this study follows previous corporate voluntary disclosure literature (see Agrawal & Knoeber, 1996; Elghuweel, 2015; Ntim, 2009) and employs a two-stage least squares (2SLS) model.

Two main conditions should be achieved when applying a 2SLS model are the rank condition and the order condition (Chenhall & Moers, 2007). The equations system in this study includes 6^{15} exogenous variables [i.e., sector type (SEC), business culture (BC), type of audit (big 4), business environment (GCC), gross domestic product (GDP), and year dummies (YD)] and 7 endogenous variables that represent the continuous variables in the current study [i.e., environmental disclosure index (EDI), firm size (SIZE), profitability (PROF), leverage (LEV), voice and accountability (V&A), government

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[15] In the present study, all the dummy independent variables, included in the equation 1 (the main model), have been employed as exogenous variables in estimating a 2SLS model.

effectiveness (GE), and control of corruption (CC)]. The order condition for identifying a simultaneous system states that the number of exogenous variables excluded from an equation needs to be relatively similar to the number of endogenous variables counted in the equation (Beiner, Drobetz, Schmid & Zimmermann, 2006).

However, and following the suggestions of Beiner et al. (2006); Chenhall and Moers (2007), Ntim (2009) and Ntim, Lindop, and Thomas, (2013), equations (3) to (9) were independently established on the basis of logic, theory and data accessibility without too much regard to achieving the order condition. All the six simultaneous equations are over-identified and have over five exogenous variables which are deemed to be acceptable in econometric terms (Brooks, 2003; Ntim, 2009). The second condition (i.e., rank-condition), furthermore, needs that as a minimum one of the exogenous variables must have a coefficient of non-zero (Chenhall & Moers, 2007).

Additionally, to make sure that the use of the methodology of 2SLS is appropriate, and following Beiner et al. (2006) and Ntim et al. (2013), a Durbin-Wu Hausman test will be applied in order to investigate the existence of an endogenous relationship between the EDI and the continuous independent variables. Durbin-Wu Hausman test includes two-stages. Stage one, firm-specific characteristics (e.g., PROF) and CLG indicators expected to be endogenous in equation (1), will be regressed on the control variables (including the independent dummy variables), and the resulting residuals will be saved (e.g., R-PROF). Stage two, the environmental disclosure index (EDI) will be run on the actual value (e.g., PROF), the saved residuals from the first stage (e.g., R-PROF), and the control variables (i.e., BC, SEC, Big 4, GCC, GDP, YD). If the coefficient on the saved residuals (e.g., R-PROF) is statistically significant, then it could be concluded that the null hypothesis of no endogeneity will be rejected. This implies that estimating a 2SLS model is an appropriate methodology to be applied in the current study. More details will be provided in section 7.3.5.

Equation (3):

$$SIZE_{it} = \alpha_0 + \beta_1 LEV_{it} + \beta_2 PROF_{it} + \beta_3 V\&A_{it} + \beta_4 GE_{it} + \beta_5 CC_{it} + \beta_6 EDI_{it} + \sum_{i=1}^{n} \beta_i EXOGENOUS_{it} + \varepsilon_{it}$$

Equation (4):

$$LEV_{it} = \alpha_0 + \beta_1 SIZE_{it} + \beta_2 PROF_{it} + \beta_3 V\&A_{it} + \beta_4 GE_{it} + \beta_5 CC_{it} + \beta_6 EDI_{it} + \sum_{i=1}^{n} \beta_i EXOGENOUS_{it} + \varepsilon_{it}$$

Equation (5):

$$PROF_{it} = \alpha_0 + \beta_1\,SIZE_{it} + \beta_2\,LEV_{it} + \beta_3\,V\&A_{it} + \beta_4\,GE_{it} + \beta_5\,CC_{it} + \beta_6\,EDI_{it} + \sum_{i=1}^{n} \beta_i\,EXOGENOUS_{it}$$
$$+ \varepsilon_{it}$$

Equation (6):

$$V\&A_{it} = \alpha_0 + \beta_1\,SIZE_{it} + \beta_2\,LEV_{it} + \beta_3\,PROF_{it} + \beta_4\,GE_{it} + \beta_5\,CC_{it} + \beta_6\,EDI_{it} + \sum_{i=1}^{n} \beta_i\,EXOGENOUS_{it}$$
$$+ \varepsilon_{it}$$

Equation (7):

$$GE_{it} = \alpha_0 + \beta_1\,SIZE_{it} + \beta_2\,LEV_{it} + \beta_3\,PROF_{it} + \beta_4\,V\&A_{it} + \beta_5\,CC_{it} + \beta_6\,EDI_{it} + \sum_{i=1}^{n} \beta_i\,EXOGENOUS_{it}$$
$$+ \varepsilon_{it}$$

Equation (8):

$$CC_{it} = \alpha_0 + \beta_1\,SIZE_{it} + \beta_2\,LEV_{it} + \beta_3\,PROF_{it} + \beta_4\,V\&A_{it} + \beta_5\,GE_{it} + \beta_6\,EDI_{it} + \sum_{i=1}^{n} \beta_i\,EXOGENOUS_{it}$$
$$+ \varepsilon_{it}$$

Equation (9):

$$EDI_{it} = \alpha_0 + \beta_1\,SIZE_{it} + \beta_2\,LEV_{it} + \beta_3\,PROF_{it} + \beta_4\,V\&A_{it} + \beta_5\,GE_{it} + \beta_6\,CC_{it} + \beta_6\,GCC_{it}$$
$$+ \sum_{i=1}^{n} \beta_i\,CONTROLS_{it} + \varepsilon_{it}$$

Consistent with Agrawal and Knoeber (1996), equation (9) is estimated together with equations (3) to (8) as a simultaneous system applying a 2SLS model. Crucially, in the first step, each equation from (3) to (8) specified above will be estimated with its respective exogenous variables. The predicted or instrumented values that resulted from the first stage will be saved. In stage two, the environmental disclosure index (EDI) is regressed on the predicted instruments and the control variables in equation (9). This process considers environmental disclosure index (EDI) as an endogenous variable alongside with the six continuous independent variables, which allows them to influence EDI, but similarly, allows EDI to influence these variables (firm-specific characteristics and country-level governance) (see Beiner et al., 2006; Ntim, 2009).

Collectively, after comparing the findings of estimating a 2SLS model in equation (9) with the main OLS results, if the results remain relatively similar this indicates that the findings of this study are not largely affected by the presence of endogeneity problem. Thus, the results will express more robustness than sensitivity. The next sub-heading explains estimating a lagged effect model.

4.7.2.3 Lagged-effect Model

Prior literature (e.g. Campbell, 2004; Haniffa & Cooke, 2005) suggests the existence of a time lag in the relationship between EDI and the explanatory variables, where EDI performance of this year

could be related to the fulfilment of the next year. This lagged structure could be a result of that management decisions could have a period of gestation within which their full interests could occur. Also, it could be related to the desire of continuing the increase of CED practices in the following year to receive a higher market valuation as well as to attract external financing.

Following previous studies (see Haniffa & Hudaib, 2006; Ntim, 2009; Weir, Laing, & McKnight, 2002), the problem of endogeneity that could result from the potential time lag between the research variable is controlled for by re-estimating the main equations with one year lagged structure which could be clarified in the equation (10) as follows:

Equation (10):

$$EDI_{it-1} = \alpha_0 + \beta_1\ SIZE_{it-1} +\ \beta_2\ LEV_{it-1} +\ \beta_3\ PROF_{it-1}\ +\ \beta_4\ V\&A_{it-1} + \beta_5\ GE_{it-1} +\ \beta_6\ CC_{it-1} +\ \beta_7\ SEC_{it-1}$$
$$+\ \beta_8\ BC_{it-1} + \beta_9\ BIg4_{it-1} + \beta_{10}\ GCC_{it-1}\ + \sum_{i=1}^{n} CONTROLS_{it-1} +\ \varepsilon_{it}$$

The following subsection discusses how endogeneity problems could be addressed by estimating a firm-level fixed-effects model in order to check whether the findings obtained from the OLS model are robust or sensitive.

4.7.2.4 Firm-Level Fixed-Effects Model

Companies are typically varied regarding the prospects and difficulties that might encounter them over time (Larcker & Rusticus, 2010). Previous empirical evidence (Elmeghrhi et al., 2016; Guest, 2008; Henry, 2008; Ntim & Soobaroyen, 2013; Wooldridge, 2010) stated that variables such as CED could be dynamically affected by unobserved firm certain characteristics (e.g. firm culture, complexity and executive talent) (Gujarati, 2003). Therefore, this study attempts to control for concerns that environmental disclosure could be influenced by unobserved firm-level heterogeneities by generating 179 dummies that represent 180 MENA listed companies. These 179 dummies are employed to re-estimate the main OLS model to check whether the main findings have been considerably affected by the existence of endogeneity problems. As such, the results that could emerge from estimating the main OLS regression will be supported by estimating a fixed-effects model as robustness test which could be specified as follows:

Equation (11):

$$EDI_{it} = \alpha_0 + \beta_1\ SIZE_{it} +\ \beta_2\ LEV_{it} +\ \beta_3\ PROF_{it}\ +\ \beta_4\ V\&A_{it} + \beta_5\ GE_{it} + \beta_6\ CC_{it} + \beta_7\ SEC_{it} + \beta_8\ BC_{it}$$
$$+\ \beta_9\ BIg4_{it} + \beta_{10}\ GCC_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} +\ \varepsilon_{it}$$

Overall, the dependent variable (EDI) then will be regressed on the independent variables (firm-specific characteristics, country-level governance and region-specific pressures), since the result of this test (Fixed-Effects) would support the findings of the main OLS regression test if the relationship between the research variables took the same direction of the main test. The next section concludes the chapter.

4.8 Conclusion

This chapter discusses the methodology adopted for the current research purposes. Concerning the research philosophy, this study adopts an ontological realism and epistemological positivism positions. Thus, quantitative research approach is employed.

With regard to the research methods, this study applies quantitative content analysis technique to document the levels, trends and patterns of CED practices across nine Arab MENA emerging markets from 2010 to 2014. The unweighted disclosure index is constructed based on both previous CED literature and global reporting initiatives, and a set of reliability and validity tests have been considered.

To make sure that the expected variability in CED across the selected countries is comprehensively investigated from an institutional perspective, three groups of variables have been employed. These variables are firm-specific characteristics (firm size, profitability, leverage, sector type and auditor type), country-level governance (V&A, GE, and CC), and finally region-specific pressures (business culture and business environment or sub-region).

Then, and to examine the relationship between the EDI and the multilevel variables, a Pooled OLS model has been applied. Also, to investigate whether the results of this study are robust or sensitive, a series of the additional tests have been considered. These tests are including estimating an alternative disclosure index model, a lagged effect model, a firm-level fixed-effects model, and a 2SLS model.

In the next chapter, the descriptive results of CED measurement will be considered across the nine Arab MENA countries at both national and regional scales of analysis. These findings offer sufficient comparative data related to the environmental disclosure across the region.

Chapter Five: Corporate Environmental Disclosures in the Arab MENA region

5.1 Introduction

This chapter presents and discusses the levels of, and patterns and trends in, Corporate Environmental Disclosure Index (EDI) applied to the Arab MENA companies. It has two primary purposes. Firstly, it offers detailed data of the EDI using different categories of descriptive statistics. In this sense, a summary of descriptive statistics regarding CED levels and trends based on the full sample is documented. Secondly, this chapter explains the variability observed in the levels of CED practices based on the different patterns of firm size and industry type.

This chapter is organised as follows. Section 5.1 describes the descriptive statistics of CED levels based on the full sample at both country and regional scales. Section 5.2 explains descriptive statistics based on firm size. Section 5.3 discusses descriptive statistics based on the type of industry. Finally, Section 5.4 summarises this chapter.

5.2 Descriptive Statistics based on the Full Sample (all 900 firm-years)

Using the adopted and developed Environmental Disclosure Index (EDI), the annual reports of 180 firms listed on nine Arab MENA stock markets were analysed over the period from 2010 to 2014, inclusive. To assess the reliability of data collected in a study, high-quality tests are significant. Two primary methods to address the reliability of the adopted EDI articulated in previous literature (Beattie & Thomson, 2007; Hooks & van Staden, 2011; Ntim, 2016). First, two coders participated in the process of content analysis, and their results are representing little errors/discrepancies, which tackled through additional testing amongst coders. The alternative method is to use one coder, but reliability is reached by completing a pilot sample and solving any discrepancies. In this study, both methods were applied. Also, to make sure that reliability and consistency are achieved, a pilot study of 20 annual reports from Tadawul (the Saudi Stock market) representing both sectors (include five large and five small sized firms each) were independently coded by two investigators; each one coded ten annual reports issued in 2014. Collectively, no main changes have arisen with the agreement coefficient between both investigators which was adequately high at 0.79, observing that the satisfactory level ranges between 0.70 and 0.80 (Beattie & Thomson, 2007; Krippendorff, 2004; Milne & Adler, 1999). Additionally, Cronbach's α is considered to be the most extensively used index of data reliability (Bland & Altman, 1997). Inappropriate application of Cronbach alpha might lead to a condition in which a test is criticised for not producing reliable findings, or the test is incorrectly discarded. To avoid this situation, an understanding of the related perceptions of internal consistency,

unidimensionality or homogeneity could assist to develop the use of alpha (Santos, 1999). Internal consistency must be examined before a test could be applied to ensure the reliability and validity of data (Tavakol & Dennick, 2011). For scales or tests which are employed to compare between the different groups (five sub-indices in the current study) Alpha values of 0.7 to 0.8 are considered as satisfactory (Bland & Altman, 1997). In the present study, α value is 0.79 which indicates an adequate level of reliability of the used EDI.

As presented in Fig 5.1, the analysis process of this study consists of two dimensions: comparisons between CED amounts at country level and CED patterns, trends, and levels at the regional scale. The first aspect includes one level of comparative analysis of CED levels among nine MENA countries. The second dimension involves two levels of analysis: sub-indices (categories) and individual items on the regional basis. Furthermore, the analysis procedure in this study starts from the micro level of countries and moves towards the macro standard of the region. In the following sections, both dimensions will be discussed.

Table 5.1 below shows CED percentages across the sampled countries reflecting the first dimension of analysis. The Table does not indicate a high level of disclosure in the region. Even in 2014, which not only is the most recent year surveyed but also yields the highest overall score for each of the nine countries, the mean for the region was only 15.7%; in other words, fewer than one in six of the potential items was disclosed on average. Moreover, in no year does any individual country show an EDI greater than 20%. This appears to resonate with comments in the previous literature on CED and CSD in the Arab MENA region to the effect that social and environmental disclosure levels are low (Elmogla et al., 2015; Imam, 2000; Rizk et al., 2008), as in much of the developing world (Andrew et al., 1989; Belal & Cooper, 2011; Belal et al., 2010). However, it should be noted that the more comprehensive the disclosure index, comprising a greater number of items, and the more precise the individual items included in it (the two tend to be related), the more likely it is that there will be items about which little or no disclosure is made, not least because some companies will not possess the relevant characteristic for such disclosure to be possible. In other words, some items might not be relevant to some companies, though it is not always easy to identify where this is the case. This is presumably one reason why industrial companies are typically shown to disclose more than service companies – though there are external influences, such as visibility, involved too (Lang & Lundholm, 1993; Verrecchia, 2001).

Dimension 1: Comparisons of CED levels

Dimension 2: Patterns of CED (at regional level)

Level 1: Countries

Level 2: sub-indices

Level 3: individual items
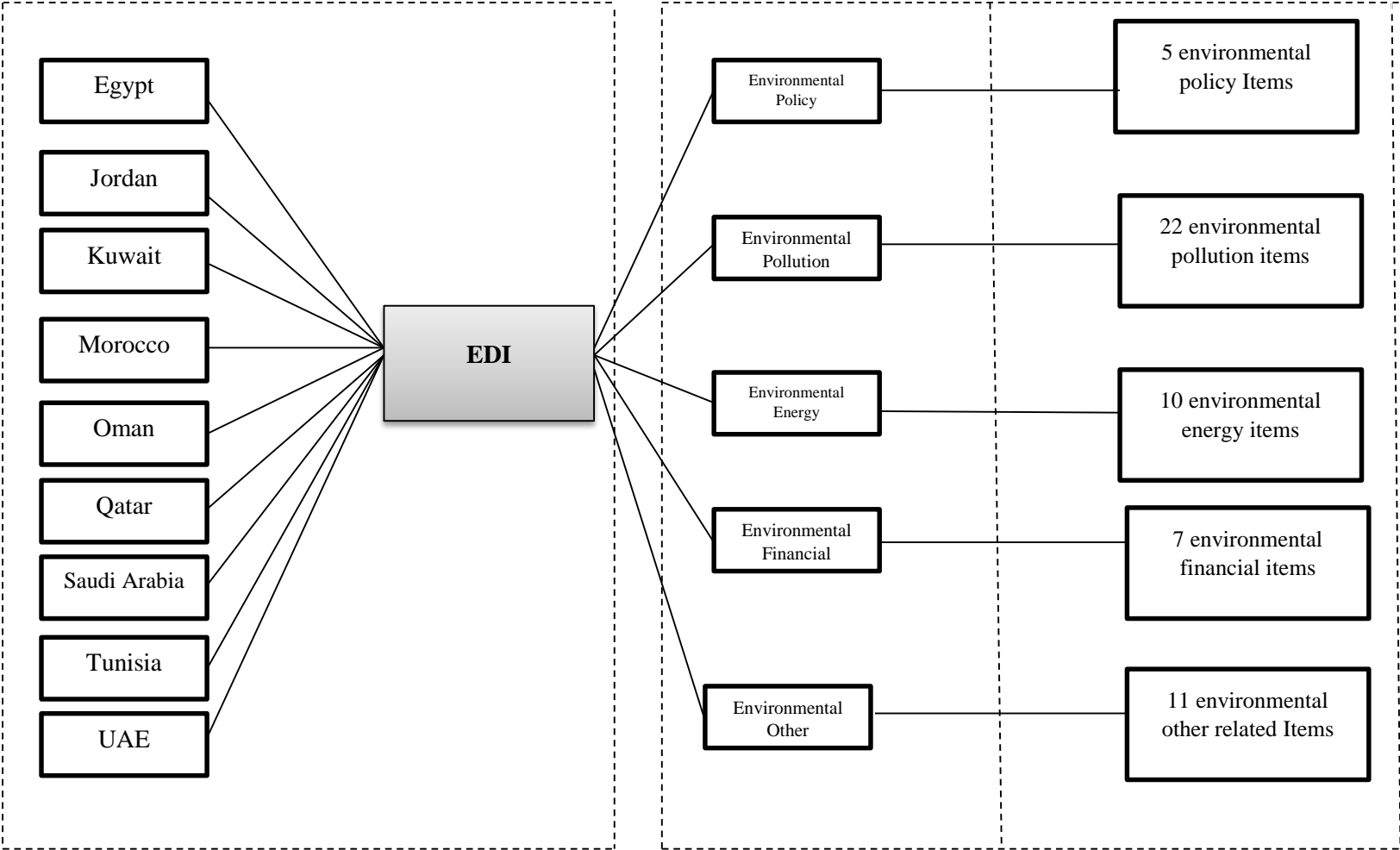
Figure 5.1: The Dimensions and Levels of the Results

Nevertheless, when the figures in Table 5.1 are compared with studies in the developed world, the relatively low incidence of CED in the Arab MENA region appears to be confirmed. In the US, for instance, environmental-related corporate disclosures, in a multi-sector study, scored 81.8% of the items in a 2009 study (Matisoff et al., 2013). Similarly, environmental reporting in France, Germany and the UK recorded 27%, 43% and 64% of the adopted items, respectively, in a study by Barbu et al. (2014).

Table 5.1: The CED of All Firm Years based on Countries.

| | CED among the sampled firms (%) | | | | | | | |
	2010	2011	2012	2013	2014	2014 Rank	Mean	Change, 2010-2014
Egypt	**14.82**	**16.27**	**17.18**	18.55	**19.64**	2	17.29	4.82
Jordan	10.27	10.55	11.09	13.45	15.55	6	12.18	5.28
Kuwait	11.27	12.27	12.82	14.73	16.55	3	13.53	5.28
Morocco	10.89	11.66	12.49	14.32	15.73	5	13.02	4.84
Oman	10.82	11.64	12.91	14.36	14.82	8	12.91	4.00
Qatar	11.82	12.54	13.36	15.18	16.36	4	13.85	4.54
Saudi Arabia	11.09	13.09	14.91	16.82	**19.82**	1	15.15	8.73
Tunisia	**5.64**	**4.91**	**5.55**	**7.27**	**7.55**	9	6.18	1.91
UAE	11.36	12.00	12.09	14.18	15.55	6	13.04	4.19
Regional mean	10.86	11.64	12.46	14.23	15.70		13.00	4.84
Change for year	-	+0.78	+0.82	+1.77	+1.47			

Note: 2-tailed t-test conducted on country mean for the year vs mean of all the other countries (together) for that year. **Bold** figures indicate disclosure for that year that is statistically greater or less than the regional mean at a 5% level of significance.

Within the region, most of the countries are very similar in their average disclosure scores. However, the bold figures in Table 5.1 indicate countries that are significantly different from the other countries. Three countries are highlighted. First, Tunisian companies are seen to disclose significantly less, on average, than companies in the other countries. Indeed, in every year the Tunisian EDI score is about half the regional mean. Second, in most years, Egyptian companies disclosed significantly more than companies in other countries. Egypt is not a resource-based economy, but it is regarded as a leading country in the region; and its stock exchange, established in 1883, is the oldest in the MENA region, reflecting a longer history of experience and commitment to securities market regulation and requirements (Abdelsalam et al., 2007). British rule, which lasted nearly 70 years from 1882, influenced the accounting profession in Egypt and, in particular, helped to institutionalise disclosure practices initially followed in the UK (Eltkhtash, 2013). The third country, highlighted just once in Table 5.1, is Saudi Arabia. Like Egypt, Saudi Arabia is regarded as a leading country in the region. It has some very large companies and is highly dependent on the oil and gas sector, which has been the focus of some previous studies in the region (Al-Drugi & Abdo, 2012; Eljayash et al., 2012). What is particularly notable about Saudi Arabia in Table 5.1 is that it began the period as the fifth-

ranked of all the countries and thus in the bottom half of the sample, but by 2014 its companies disclosed the most, overtaking Egypt. During the period under study, it began implementing comprehensive national environmental standards, such as the General Environmental Standard for Noise and Ambient Air Standard, which – though not focused on disclosure itself – have potentially affected firms' environmental attention and performance and then their environmental reporting (Chakibi, 2013).

Indeed, it is the trends shown in Table 5.1 that are highly revealing and possibly of greater significance than the patterns identified so far. Table 5.1 also shows that the regional mean increased each year for the period under study, and the figure for 2014 was almost 45% higher than that for 2010 – a striking change. It is also notable that this increase was a region-wide phenomenon, with most countries showing broadly similar increases – except, arguably, Saudi Arabia which, as noted, overtook Egypt to be the highest ranked country in 2014. Even in the case of Tunisia, where the small absolute annual increases confirmed its bottom-ranked position, there was a reasonably substantial percentage increase (33.9%) between 2010 and 2014. Moreover, it is indicative of the extent of the growth in CED in the region over the five years that the eighth-ranked of the nine countries in 2014, Morocco, would have been the highest ranked in 2010 with its 2014 EDI score.

The other countries not highlighted at all in Table 5.1 are generally bunched around the mean and, though there are some changes in the annual rankings, the cross-sectional differences in scores are small in any given year. Moreover, the change in disclosure across the countries is of a similar order of magnitude over the five years. Thus it can be concluded that, while there are some significant differences in the disclosure levels between the highest and lowest countries in any particular year, no individual country or group of countries is mainly responsible for the significant growth that has occurred, which is a region-wide phenomenon.

Further tables present a more detailed analysis of the CED figures, thus providing other opportunities to explore whether particular sub-trends can account for the increase in overall disclosure. One avenue for analysis is the various elements of CED. As explained earlier, the 55 disclosure items were put into five categories, permitting the calculation of five sub-indices of the EDI. Table 5.2 shows the results.

Table 5.2: The Environmental Disclosures among the Sampled Firms based on Sub-index.

Sub-index of EDI	(%)					Change, 2010-2014	Contribution to total change
	2010	2011	2012	2013	2014	Amount (%)	%
i. Policy (5)[a]	41.00	42.56	44.67	45.67	46.89	5.89 (14.4)	11.1
ii. Pollution (product-process) (22)	6.59	7.95	8.66	10.03	11.34	4.75 (72.1)	39
iii. Energy (10)	5.78	5.83	6.06	7.33	8.28	2.50 (43.3)	9.4
iv. Financial (7)	16.03	15.95	17.62	21.9	23.89	7.86 (49.0)	21
v. Other (11)	7.02	7.52	7.98	9.75	11.72	4.70 (67.0)	19.5

a   Number of items in sub-index shown in parentheses.

Tables 5.2 to 5.7 show that the strongest category for disclosure was environmental 'policy'. Examination of the detailed data shows that nearly all companies (97.8%) made general statements of "the firm will or the firm does" nature, and the vast majority (83.3%) provided an actual statement of policy in 2014. Both items showed some increase over the period of study, but from an already high base (see Table 5.3).

Table 5.3: Environmental Policy Category

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in MENA region (%)					
	2010	2011	2012	2013	2014	All
1- General statements of "the firm will, or the firm does" nature	93.3	93.9	93.9	97.2	97.8	95.2
2- Actual statement of policy	79.4	80.6	79.4	81.7	83.3	80.8
3- Statements are demonstrating that pollution caused by firm's operations will be or has been reduced	14.4	19.4	22.8	23.9	23.9	20.8
4- Disclosing firm's energy policies	1.10	1.10	1.70	2.20	3.90	20.0
5- The assessment of investments to involve such concerns towards the surrounding environment	15.6	18.9	24.4	23.3	25.6	21.6

Other items within this category and the other four categories all showed much lower scores. However, within the 'financial' category, which was the second-ranked, there were some notable scores: provisions or contingencies (70.6% in 2014); allocation record of the specific fund to protect the environment (37.2%); and discussion of economic/financial impacts (25.6%) (See Table 5.6). As might be expected from the overall scores, the other three categories contained relatively few items that were disclosed widely. Exceptions included: in the 'energy' category, the conservation and saving of energy (43.3%) (See Table 5.5); and in the 'other' category, training relating to environmental management (27.2%) and partnerships with environmental research institutions (22.2%) (See Table 5.7). Within the pollution category, which contained 22 items, just three items

scored more than 20% in 2014 – the control and treatment of emissions, etc. (56.7%), the management of waste (43.9%), and water discharge (23.3%) (See Table 5.4).

Table 5.4: Environmental Product-Process (Pollution) Category

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in MENA region (%)					
	2010	2011	2012	2013	2014	All
6- The management of waste(s)	27.2	32.8	36.1	42.2	43.9	36.4
7- Eco efficiency	7.2	12.2	11.1	12.8	18.3	12.3
8- Emissions & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	38.3	46.7	46.7	50.00	56.7	47.68
9- Climate change, carbon sequestration.	3.30	2.80	5.60	7.20	6.70	5.12
10- Products & product development, involving products that assist in protecting the environment.	11.1	14.4	14.4	18.3	18.3	15.3
11- The information of air emission.	11.7	12.2	15.0	16.1	19.4	14.88
12- The information of water discharge.	10.6	11.1	16.7	18.9	23.3	16.12
13- Research is conducting on new production approaches that used to reduce the environmental pollution.	1.70	1.70	1.70	3.90	3.90	2.58
14- The technologies of pollution prevention.	3.90	6.10	5.60	6.10	6.70	5.68
15-The control of industrial process pollution.	4.40	5.60	7.20	6.70	7.80	6.34
16- The reductions of business operations pollution.	2.20	2.80	4.40	4.40	5.00	3.76
17- The disposal information of Solid waste(s).	1.10	1.10	0.60	0.60	1.70	1.02
18- Natural resources conservation.	6.10	7.20	7.20	8.90	10.60	8.00
19- The plant of waste products Recycling.	1.70	2.20	1.70	3.90	4.40	2.78
20- The plant of effluent treatment installation.	3.30	3.90	3.90	5.60	6.70	4.68
21- The programs of Land forestation and reclamation.	3.90	3.30	3.30	4.40	5.60	4.1
22- The conservation of raw materials.	1.10	1.70	1.70	1.70	2.20	1.68
23- Total direct and indirect greenhouse gas emissions.	1.70	1.70	1.10	1.70	1.70	1.58
24- Initiatives to reduce greenhouse gas emissions.	2.20	3.90	3.90	4.40	3.90	3.66
25- Emissions of ozone-depleting substances by weight.	1.10	1.70	2.20	2.20	2.20	1.88
26- Undertaking of wildlife conservation.	0.00	0.00	0.00	0.00	0.00	0.00
27- Noise	0.60	0.60	0.60	0.60	0.60	0.60

Adams & Harte (1998) comment that what companies do not report can be of interest, not just what they do disclose. However, given the findings that have been presented so far, it is no surprise that most of the component items comprising the EDI are not disclosed by the vast majority of the companies; even in 2014, the most active year for disclosure, 32 out of the 55 items (58.2%) were disclosed by less than 10% of companies. Nevertheless, even many of the items disclosed by only a small minority of companies have been disclosed to an increasing extent over the period of the study. Of the 55 items in the EDI, only eight did not show growth between 2010 and 2014, and none declined. Thus 47 (85.4%) of the disclosure items were disclosed more at the end of the study than five years earlier. Again, this reinforces the impression of a general trend rather than increased disclosure being accounted for by a single phenomenon or a small subset of key drivers. As shown in

Table 5.2, all the sub-indices for the particular categories of disclosure grew – by between 2.50 and 7.86 percentage points, or between 14.7% and 72.1% of their 2010 figure.

Table 5.5: Environmental Energy Category

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in MENA region (%)					
	2010	2011	2012	2013	2014	All
28- The conservation and the saving of energy.	28.3	29.4	29.4	39.4	43.3	33.96
29- Use/ exploration/ development of new sources, insulation, efficiency etc.	7.80	7.20	7.80	8.9	9.40	8.22
30- Waste materials utilization for energy conservation.	2.20	2.20	2.20	2.2	2.2	2.20
31- Initiatives to reduce the consumption of energy.	5.60	6.70	8.30	8.9	8.90	7.68
32- The Voicing of firm's concern about the shortage of energy.	2.80	2.20	3.30	3.9	5.60	3.56
33- Direct use of energy.	2.20	2.20	2.20	2.2	3.90	2.54
34- Indirect use of energy.	1.70	1.10	1.10	1.7	2.20	1.56
35- Energy saving's disclosure caused by product recycling.	2.80	2.80	2.80	2.8	2.80	2.80
36- Disclosing increased energy efficiency of products.	3.90	3.30	3.30	2.8	3.90	3.44
37- Receiving awards for the programmes of energy conservation.	0.60	1.10	0.00	0.60	0.60	0.58

It is interesting to note, from the final column of Table 5.2, that the 'pollution' category accounts for more than a third of the disclosure growth, but that might be, in part, a reflection of the number of items in the category (22). If so, the finding that the 'financial' category accounts for less than a quarter of the total disclosure growth with only seven items might be more significant. It seems to suggest that a change might be occurring since Eljayash et al. (2012) reported a lack of information regarding environmental spending and costs by oil firms in the Middle East – although information on actual and planned expenditure on pollution control (represented by two of the items) is still found to be very limited in the current study.

Table 5.6: Environmental Financial Category

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in MENA region (%)					
	2010	2011	2012	2013	2014	All
38- The discussions of areas with economic / financial impacts.	16.7	16.7	17.2	21.7	25.6	19.6
39- The discussion of economic- environmental interaction.	7.80	8.90	9.40	11.1	11.7	9.78
40- Provisions, contingencies.	47.7	46.7	53.3	67.2	70.6	57.1
41- Environmentally related loans, costs of purchasing, grants and installing new environmentally friendly equipment & machines and consultancy costs & maintenance.	9.40	9.40	7.20	11.7	13.9	10.3
42- Previous & present expenditure for pollution control.	2.80	2.20	2.20	3.30	5.60	3.22
43- Expenditures estimated in future for pollution control facilities and equipment.	1.10	1.10	0.60	1.10	2.80	1.34
44- Allocation record of specific fund.	25.6	27.8	33.3	37.2	37.2	32.2

Generally, two unique insights are further observed. Firstly, there is a substantial variation in the individual items of the EDI amongst the sampled MENA companies. It ranges from 95.2% in the case of *environmental policy statements* to 0% concerning the non-disclosed item (*wildlife conservation*) by all 180 firms over the five-year period. Secondly, the data shows an incremental trend in the disclosure of environmental issues over time. For example, the *saving of energy* was scored 28.3 % in 2010 but considerably increased to be 43.3% in 2014. Similarly, *Partnerships between environmental research institutions and businesses* has fundamentally improved from 12.2% in 2010 to 22.2% in 2014. This result is consistent with prior literature, which had identified changes in CED over time (Henry, 2008; Hussainey et al., 2011).

Table 5.7: Environmental Others Category

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in MENA region (%)					
	2010	**2011**	**2012**	**2013**	**2014**	**All**
45- Environmental education	12.2	13.9	12.8	19.4	19.4	15.5
46- Training related to environmental management and environmental accounting for employees, accountants and managers.	16.7	20.0	20.6	21.1	27.2	21.1
47- Environmental awards.	12.2	11.7	12.8	16.7	17.2	14.1
48- Environmental research.	2.80	3.90	3.90	4.40	6.70	4.34
49- Partnerships between environmental research institutions and businesses.	12.2	13.3	15.0	20.0	22.2	16.54
50- A moral responsibility enhancement affected by Islamic principles.	13.9	13.9	13.3	13.9	13.9	13.8
51- Maintenance the balance of environment.	0.00	0.00	0.00	0.00	1.10	0.22
52- Protect & enhance future generation's well-being.	4.40	3.89	6.70	8.90	14.4	7.65
53- Designing facilities which are harmonious with the surrounding environment.	0.56	0.00	0.00	0.00	1.10	0.33
54- Contribution to beautify the environment in terms of art/sculptures or cash.	1.70	1.67	2.20	2.80	3.30	2.33
55- Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	0.60	0.60	0.00	0.00	2.20	0.68

Table 5.8 presents a summary of the descriptive statistics for annual reports disclosures of environmental information at the regional level. Panel A shows all firm-years disclosure which indicates a gradual increase over the period of the study. The highest disclosed environmental information recorded in 2014 with an average of 15.70%, whereas, the lowest level of disclosure reported in 2010 with 10.86% average. Panels B and C represent the environmental disclosures based on firm size. The highest mean value was scored by the large-sized companies (20.38) in 2014. However, the lowest environmental disclosure has been recorded by small-sized companies in 2010 with 5.07 mean values. This implies that firm size could be attributed to the variability in CED practices in the MENA region. In this context, the results are linked to prior CED literature (Elsayed & Hoque, 2010; García-Sánchez & Rodríguez-Ariza, 2013; Momany & Pillai, 2013) which stated that firm size is positively associated with the disclosed amount of environmental information.

Table 5.8: The Summary Descriptive Statistics for Environmental Disclosure Index (EDI) at the Regional Level.

Corporate Environmental Disclosure Index	Mean	Std. Dev.	Skewness	Kurtosis	Minimum	Maximum
***Panel A:** All Firm Years*	13.00	10.00	1.42	2.30	0.00	56.36
2010	10.86	8.37	1.59	3.00	0.00	49.10
2011	11.64	9.04	1.49	2.88	0.00	50.91
2012	12.46	9.80	0.05	-0.65	0.00	50.09
2013	14.23	9.90	-0.03	-0.54	0.00	54.45
2014	15.70	10.76	1.28	1.55	0.00	56.36
***Panel B:** All Small Firms*	6.89	15.78	0.69	-0.45	0.00	81.60
2010	5.64	14.75	0.90	-0.047	0.00	79.00
2011	5.96	14.68	0.80	-0.23	0.00	78.00
2012	6.42	15.07	0.53	-0.59	0.00	79.00
2013	7.66	16.78	0.57	-0.74	0.00	85.00
2014	8.79	17.61	0.65	-0.69	0.00	87.00
***Panel C:** All Large Firms*	19.06	20.12	-0.08	-0.74	0.00	90.00
2010	16.08	18.70	0.12	-0.84	0.00	90.00
2011	17.33	19.38	0.13	-0.94	0.00	90.00
2012	18.44	20.04	-0.16	-0.71	0.00	90.00
2013	20.80	21.10	-0.25	-0.64	0.00	90.00
2014	22.65	21.39	-0.26	-0.56	0.00	90.00
***Panel D:** INDUS Firms*	16.37	18.41	-0.08	-0.74	0.00	88.40
2010	13.80	17.27	0.12	-0.84	0.00	89.00
2011	14.99	17.72	0.13	-0.94	0.00	88.00
2012	15.76	18.15	-0.16	-0.71	0.00	88.00
2013	17.64	19.29	-0.25	-0.64	0.00	88.00
2014	19.68	19.62	-.026	-0.56	0.00	89.00
***Panel E:** SERV*	9.58	16.60	0.465	-0.44	0.00	83.20
2010	7.92	15.35	0.711	-0.085	0.00	80.00
2011	8.30	15.51	0.504	-0.539	0.00	80.00
2012	9.17	16.24	0.529	-0.300	0.00	82.00
2013	10.83	17.64	0.335	-0.561	0.00	87.00
2014	11.70	18.24	0.249	-0.693	0.00	87.00

While the Panels *A, B and C* represent the mean variances for means equality between all small and all large firms, Panels *D* and *E* test for means equality between all Industrial firms and all service firms, respectively. The skewness and kurtosis statistics in columns 4 and 5, respectively, tests for the normal distribution. The data is regarded to be within the normal distribution if the standard skewness is within ±1.96 and standard kurtosis of ±3 (Haniffa & Hudaib, 2006).

Moreover, panels D and E show CED practices based on industry type. While the highest percentage of environmental information was disclosed by the industrial firms in 2014 with 19.68 mean value, the lowest CED was recorded by businesses operating in the service group of sectors in 2010 with 7.13 average value. These results are tied to previous environmental disclosure literature (Ali & Rizwan, 2013; Thompson & Cowton, 2004) which stated that the variation in CED could be linked to sector type. Consistent with the evidence of wide variability in CED levels, the findings of this study suggest that there is substantial dispersion in the summary of environmental disclosure amongst

the sampled firms. The disclosure ranges from a minimum of 0% to a maximum 56.36% with 13% average tested companies' disclosure of the 55 analysed EDI items (see Table 5.8).

The next step of this study seeks to investigate the association between EDI as a dependent variable and different independent variables employed from an institutional perspective. Thereby, determining the distributional properties of the EDI is significant because the existence of elevated non-normal behaviour could posture problems for estimating Ordinary Least Squares (OLS), as OLS estimation assumes normality in variables (Ntim, 2009). Since the technique of OLS would be applied to examine all the hypotheses of the next step of this research study, a normal distribution curve was superimposed. First, the skewness statistic (0.13) in panel A of Table 5.8, rejects the null hypothesis (the critical value for accepting skewness is within ± 1.96) that the EDI is symmetrically distributed (i.e., skewed to the left with longer right tail) at the 5% significance level.

Second, the kurtosis statistic (-0.59) in Panel A of Table 5.8, also rejects the null hypothesis (the absolute critical value for accepting Kurtosis is within ±3) that the EDI is symmetrically distributed. Also, Table 5.8 shows that the EDI is fairly less non-normal in comparison with a normal distribution. Descriptive statistics of the EDI for each of the five years show considerable variability (large standard deviations) in CED levels. Moreover, they are all mildly compared with a normal distribution and skewed to the left with less clustering amongst the 900 observations (see Appendix 2).

5.3 Descriptive Statistics based on Firm Size (Large and Small)

Panels B and C in Table 5.8 (p120) represent the recorded disclosures based on firm size, where the highest mean value scored by large-sized companies in 2014 which was 20.38. However, the lowest percentage of the disclosed environmental information was scored by small-sized firms' in 2010 with a mean value of 5.07. Besides, the average value of the environmental information reported by large companies in 2010, 2011, 2012 and 2013 were 14.47, 15.6, 16.6 and 18.72 respectively. Moreover, the recorded mean values of CED by the small-sized firms in 2011, 2012. 2013 and 2014 were 5.36, 5.78, 6.89 and 7.91, respectively. This means that firm size is positively associated with the disclosed amount of environmental information in MENA countries, as the larger sized firms report greater environmental information in their annual reports in the region. The common sense between CED provided by both large and small sized companies is that they are both incrementally increasing over time. Figure 5.2 below presents a comparison of CED levels between large and small-sized firms using a computed aggregate mean value.

5.2: A Comparison of CED based on Firm Size in the Full Sample.
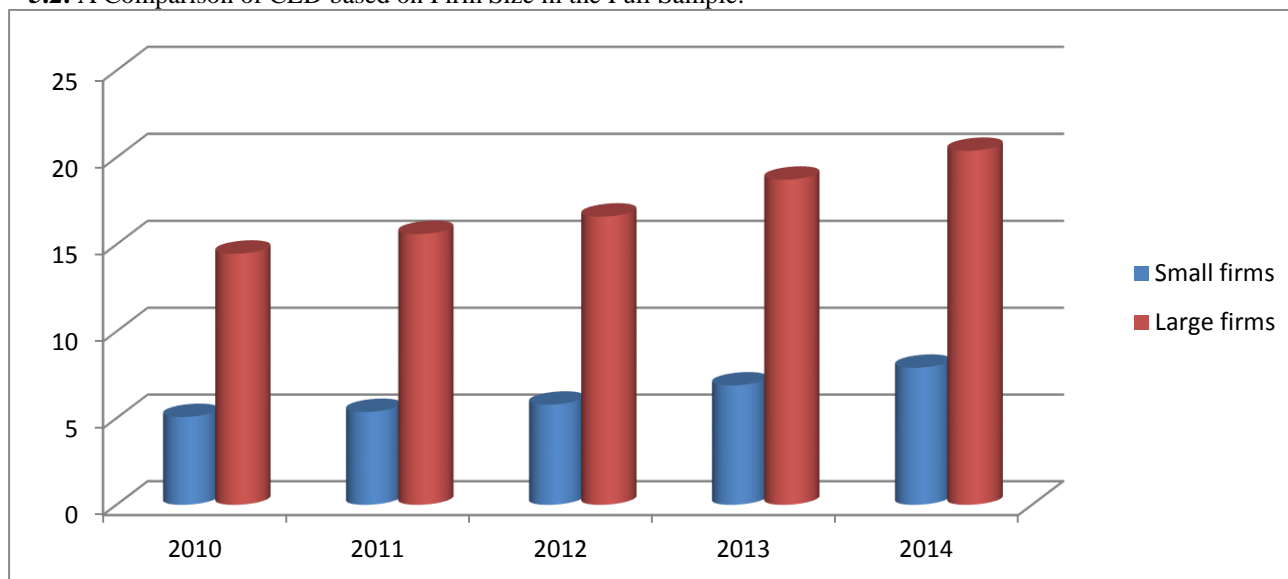
Tables 5.9 to 5.13 below show a comparison of CED levels with all the 55 individual environmental items analysed between large sized and small-sized firms.

The reasoning is to ascertain the environmental elements of the EDI that account for the substantial variations witnessed in Tables 5.9 to 5.13 amongst large sized and small-sized firms. The study sample is divided into 90 large sized companies and 90 small sized firms as described in section 4.4 of chapter four. All large sized and small-sized companies had a total of 450 firm-year observations each.

Some interesting results arise from Tables 5.9 to 5.10. Firstly, and in line with the results at the aggregate levels, there is an indication of substantial variability in the provided levels of CED between all large sized and small-sized firms. Mainly, it presents that in 53 (96.36%) out of the 55 investigated environmental items, CED levels among large-sized companies are more significant than small-sized firms. By contrast, two (3.64%) of the 55 individual environmental items did not show any significant difference in CED levels between large and small firms at all disclosure levels during the period of study. These two environmental topics include *Undertaking of wildlife conservation* with completed non-disclosure among all large and small sized companies (see Table 5.10), and *Maintenance the balance of environment* with 0.22% (see Table 5.13).

Table 5.9: A comparison of CED Levels with the Individual Items included in the Environmental Policy Sub-index based on Firm Size.

| Individual items of Environmental Policy | CED levels between Large and Small Firms (%) | | | | | | | | | | | |
| | All firms year | | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | |
	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small
General statements of "the firm will or the firm does" nature	100	90.67	100	87.78	100	86.67	100	87.78	100	94.44	100	96.67
Actual statement of policy	81.11	80.89	80	80	80	80	81.11	77.78	81.11	82.22	83.33	84.44
Statements demonstrating that pollution caused from firm's operations will be or has been reduced	33.78	8	24.44	4.44	31.11	7.78	36.67	8.89	38.89	8.89	37.78	10.0
Disclosing polices of firm's energy	4.00	0.00	2.22	0.00	2.22	0.00	3.33	0.00	4.44	0.00	7.78	0.00
The assessment of Investments to involve such concerns towards the surrounding environment	28.0	15.11	21.11	10.0	25.56	12.22	32.22	16.67	31.11	15.56	30.0	21.11

Secondly, these tables present that the observed differences in CED levels between large and small firms could be better clarified by some environmental items than others. In particular, four (7.27%) out of 55 used environmental items in the EDI illustrated the highest significant variability between large and small-sized firms. For these items, the variability between the average large and small companies is more than 40 % points. These environmental elements are *Emissions & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve* (Table 5.10, p149), *the conservation and the saving of energy* (Table 5.11, p151), *Provisions, Contingencies and Allocation record of a particular fund* (Table 5.12, p152). For example, while on average, 55.33 % of large-sized firms disclosed information regarding *energy saving*; only 12.67 % of the small-sized companies have disclosed this item (See Table 5.11, p151). Similarly, although 68.67 % of the large firms have *prevented and controlled the Emissions & pollution*, only 26.67 % of the small businesses have disclosed information indicated this environmental item, a variability of 42 percentage point (Table 5.10, p149).

In the second level, five items (9.09%) out of the 55 environmental items represent the second highest significant level of variability in CED provided by large and small firms. For these environmental elements, the variability between large and small sized company is between 20% and 30%. These environmental issues are the *discussions of areas with economic/financial impacts* (Table 5.12, p152), *Environmental Education* (Table 5.13, p153), *Training related to environmental management and environmental accounting for employees, accountants, and managers* (Table 5.13), *Environmental Awards and Partnerships between environmental research institutions and businesses* (Table 5.13). These notes suggest a wider range of variability amongst environmental other items. For instance, while on average, 30% of the large firms have disclosed information regarding *Environmental Education* item, only 1.11 % of the small businesses revealed this item. Correspondingly, on average 6.22 % of the small-sized firms disclosed information regarding *environmental training* in relation to 36 % by large firms, a difference of 29.78 percentage point.

Table 5.10: A Comparison of CED Levels with the Individual Items included in the Environmental Pollution Sub-index based on Firm Size.

Individual items of Environmental product-process sub-index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small
The management of waste(s)	51.33	21.56	40	14.44	47.78	17.78	50	22.22	58.89	25.56	60.0	27.78
Eco efficiency	23.78	0.89	13.33	1.11	23.33	1.11	22.22	0.00	24.44	1.11	35.56	1.11
Emissions & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	68.67	26.67	58.89	18.88	67.78	24.44	67.78	25.56	72.22	27.78	76.67	36.67
Climate change, carbon sequestration.	9.77	0.44	6.67	0.00	5.56	0.00	11.11	0.00	13.33	1.11	12.22	1.11
Products & product development, involving products that assist in protecting the environment.	28.0	2.67	21.11	1.11	27.78	1.11	27.78	1.11	32.22	4.44	31.11	5.56
The information of air emission.	28.89	0.89	22.22	1.11	23.33	1.11	30	0.00	31.11	1.11	37.78	1.11
The information of water discharge.	27.56	4.67	21.11	0.00	17.78	4.44	28.89	4.44	31.11	6.67	38.89	7.78
Research conducting on new production approaches that used to reduce the environmental pollution.	5.11	0.00	3.33	0.00	3.33	0.00	3.33	0.00	7.78	0.00	7.78	0.00
The technologies of pollution prevention.	11.33	0.00	7.78	0.00	12.22	0.00	11.11	0.00	12.22	0.00	13.33	0.00
The control of industrial process pollution.	12.0	0.67	8.89	0.00	10	1.11	14.44	0.00	13.33	0.00	13.33	2.22
The reductions of business operations pollution.	7.56	0.00	4.44	0.00	5.56	0.00	8.89	0.00	8.89	0.00	10.0	0.00
The disposal information of Solid waste(s).	2.00	0.00	2.22	0.00	2.22	0.00	1.11	0.00	1.11	0.00	3.33	0.00
Natural resources conservation.	15.33	0.67	12.22	0.00	14.44	0.00	14.44	0.00	16.67	1.11	18.89	2.22
The plant of waste products Recycling.	5.33	0.22	3.33	0.00	4.44	0.00	3.33	0.00	7.78	0.00	7.78	1.11
The plant of effluent treatment installation.	9.33	0.00	6.67	0.00	7.78	0.00	7.78	0.00	11.11	0.00	13.33	0.00
The programs of Land forestation and reclamation.	7.11	1.11	6.67	1.11	5.56	1.11	5.56	1.11	7.78	1.10	10.0	1.11
The conservation of raw materials.	3.33	0.00	2.22	0.00	3.33	0.00	3.33	0.00	3.33	0.00	4.44	0.00
Total direct and indirect greenhouse gas emissions.	3.11	0.00	3.33	0.00	3.33	0.00	2.22	0.00	3.33	0.00	3.33	0.00
Initiatives to reduce greenhouse gas emissions.	7.33	0.00	4.44	0.00	7.78	0.00	7.78	0.00	8.89	0.00	7.78	0.00
Emissions of ozone-depleting substances by weight.	3.77	0.00	2.22	0.00	3.33	0.00	4.44	0.00	4.44	0.00	4.44	0.00
Undertaking of wildlife conservation.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noise	1.11	0.00	1.11	0.00	1.11	0.00	1.11	0.00	1.11	0.00	1.11	0.00

Consistent with the evidence gained from exploring the *EDI* at aggregate levels, Tables 5.9 to 5.13 exhibit that CED levels with the individual environmental items increasing over time across both large and small-sized firms.

However, this growth of CED has recorded less incremental trends in both types compared with the aggregate level presented in Table 5.8 (p120). For instance, only 40% of the large-sized companies disclosed *waste management information* in 2010 (see Table 5.10, p149). It increased to 47.78 %, 50 %, 58.89 % and 60 % in 2011, 2012, 2013 and 2014, respectively. Consistently, 14.44 % of small firms disclosed *waste management information* in 2010. It increased to 17.78 %, 22.22 %, 25.56 %, 27.78, in 2011, 2012, 2013 and 2014, respectively. As such, the changing rates of *waste management* item among large and small firms, over the period of study, are 12.22% and 13.22 respectively, while this item has recorded 16.70% at the aggregate level of the individual elements in the region. Likewise, *energy saving* item has recorded increasing trends in both large (small) firms from 51.11(5.56) in 2010 to 63.33(23.33) in 2014 (see Table 5.11, p151).

Also, the variability in the individual environmental elements based on firm size is reflective of different environmental disclosures between large and small companies. That is, it proposes that large size companies were disclosing such environmental items earlier than small businesses. For example, the *discussion of economic and environmental interaction* is published in the entire period of study by large firms in the MENA region and scored mean values are 15.56, 17.78, 17.78, 22.22 and 22.22 in 2010, 2011, 2012, 2013 and 2014, respectively (see Table 5.12, p152).

In contrast, among the small firms, the *economic and environmental interaction* has been only discussed in 2012 and 2014 with 1.11 mean value each. This matter could be associative of the advantages gained by large size firms (e.g. financial benefits), which could make them more open to change about CED rather than small sized companies.

Table 5.11: A Comparison of CED Levels with the Individual Items included in the Environmental Energy Subindex based on Firm Size

Individual items of Environmental Energy Sub-Index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small
The conservation and the saving of energy.	55.33	12.67	51.11	5.56	51.11	7.78	48.89	10	62.22	16.67	63.33	23.33
Use/ exploration/ development of new sources, insulation, efficiency etc.	14.67	1.78	13.33	2.22	13.33	1.11	14.44	1.11	15.56	2.22	16.67	2.22
Waste materials utilization for energy conservation.	3.33	1.11	3.33	1.11	3.33	1.11	3.33	1.11	3.33	1.11	3.33	1.11
Initiatives to reduce the consumption of energy.	14.0	1.33	10.0	1.11	12.22	1.11	15.56	1.11	16.67	1.11	15.56	2.22
The Voicing of firm's concern about the shortage of energy.	6.89	0.22	5.56	0.00	4.44	0.00	6.67	0.00	7.78	0.00	10	1.11
Direct use of energy.	5.11	0.00	4.44	0.00	4.44	0.00	4.44	0.00	4.44	0.00	7.78	0.00
Indirect use of energy.	2.22	0.89	2.22	1.11	2.22	0.00	1.11	1.11	2.22	1.11	3.33	1.11
Energy saving's disclosure caused by product recycling.	5.56	0.00	5.56	0.00	5.56	0.00	5.56	0.00	5.56	0.00	5.56	0.00
Disclosing increased energy efficiency of products.	4.89	2.00	5.56	2.22	4.44	2.22	4.44	2.22	4.44	1.11	5.56	2.22
Receiving awards for the programmes of energy conservation.	1.11	0.00	1.11	0.00	2.22	0.00	0.00	0.00	1.11	0.00	1.11	0.00

Table 5.12: A Comparison of CED Levels with the Five Individual Items included in the Environmental Financial Sub-index based on Firm Size.

Individual items of Environmental Financial Sub-index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small
The discussions of areas with economic / financial impacts.	31.33	7.78	26.67	6.67	27.78	5.56	26.67	7.78	32.22	11.11	43.33	7.78
The discussion of economic- environmental interaction.	19.11	0.44	15.56	0.00	17.78	0.00	17.78	1.11	22.22	0.00	22.22	1.11
Provisions, contingencies.	68.22	46	63.33	33.33	62.22	30.0	65.56	41.11	74.44	60.0	75.56	65.56
Environmentally related loans, costs of purchasing, grants and installing new environmental friendly equipment & machines and consultancy costs & maintenance.	15.55	5.11	14.44	4.44	14.44	4.44	10.00	4.44	18.89	4.44	20.0	7.78
Previous & present expenditure for pollution control.	6.00	0.44	4.44	1.11	3.33	1.11	4.44	0.00	6.67	0.00	11.11	0.00
Expenditures estimated in future for pollution control facilities and equipment.	2.44	0.22	2.22	0.00	2.22	0.00	1.11	0.00	2.22	0.00	4.44	1.11
Allocation record of specific fund.	54.44	10.0	44.44	7.78	47.78	6.67	60	6.67	60.0	14.44	60.0	14.44

Table 5.13: A Comparison of CED Levels with the Five Individual Items included in the Environmental Other Sub-index based on Firm Size.

Individual items of Environmental Other Sub-index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small
Environmental education	30.0	1.11	23.33	1.11	26.67	1.11	25.56	0.00	37.78	1.11	36.67	2.22
Training related to environmental management and environmental accounting for employees, accountants and managers.	36.0	6.22	28.89	4.44	34.44	5.56	35.56	5.56	36.67	5.56	44.44	10.0
Environmental awards.	25.33	2.89	22.22	2.22	21.11	2.22	23.33	2.22	30.0	3.33	30.0	4.44
Environmental research.	6.44	2.22	3.33	2.22	5.56	2.22	5.56	2.22	6.67	2.22	11.11	2.22
Partnerships between environmental research institutions and businesses.	27.33	5.78	23.33	1.11	23.33	3.33	24.44	5.56	32.22	7.78	33.33	11.11
A moral responsibility enhancement affected by Islamic principles.	15.56	12.22	15.56	12.22	15.56	12.22	15.56	11.11	15.56	12.22	15.56	13.33
Maintenance the balance of environment.	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	1.11
Protect & enhance future generation's well-being.	12.44	2.89	8.89	0.00	6.67	1.11	10.0	3.33	14.44	3.33	22.22	6.67
Designing facilities which are harmonious with the surrounding environment.	0.67	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00
Contribution to beautify the environment in terms of art/sculptures or cash.	4.22	0.44	3.33	0.00	3.33	0.00	4.44	0.00	4.44	1.11	5.56	1.11
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	1.33	0.00	1.11	0.00	1.11	0.00	0.00	0.00	0.00	0.00	4.44	0.00

These findings are consistent with prior literature which argue that firm size could be attributable to the variability in corporate disclosure practices (Barako et al., 2006; Desoky & Mousa, 2009; Despina & Demetrios, 2009; Momany & Pillai, 2013; Rezaei & Shabani, 2015). However, companies with different sizes could not be responsible for the same areas. Thus, the motives for disclosure and non-disclosure in some specific categories (sub-indices) might have been their irrelevance.

The following section explains the variability in CED based on industry type across the sampled MENA countries.

5.4 Descriptive Statistics based on Industry Type (Industrial and Service Groups of Sectors)

As was discussed in subsections 4.4 and 4.5.2.2 of chapter four (Methodology Chapter), the voluntary accounting disclosure including CED literature, (e.g., Ali & Rizwan, 2013; Ghazali, 2007; Haniffa & Cooke, 2002; Thompson & Cowton, 2004) advocate that CED varies based on the different groups of industries. Notably, Haniffa & Cooke (2002) and Ali & Rizwan (2013) asserted that CED is linked to the type of industry, as firms operating in environmentally sensitive industries (e.g. oil and gas and manufacturing sectors) are more likely to provide more CED than other companies have less interaction with the surrounding environment (e.g. services sectors and real estate).

Consequently, to establish whether the variability in the scored CED levels among the stratified sampled firms could be more clarified by industry type, comparisons of CED practices would be facilitated between the sampled companies based on the kind of industry in this section. As the current study is a cross-sectional multi-country study, the sampled firms are characterised by two main groups of industries, based on stock markets classifications and derived from prior literature, are industrial and service sectors. This classification has been discussed in detail in section 4.4 of chapter four. Panels D and E of Table 5.8 (p120) cover descriptive summary statistics for the two leading groups of industries. Also, Figure 5.3 shows a comparison of the levels of aggregate CED across two groups of industries by computed summary means.

Table 5.8 further suggests that the average CED among the industrial and service firms in the period of study are 17.16 % and 8.63 %, respectively. Also, Figure 5.3 below presents that the scored CED levels are regularly higher in the cases of the industrial sectors than the service group of sectors (Figure 5.3 shows a comparison of CED levels between industry and service firms using a computed aggregate mean value).

Figure 5.3: A Comparison of CED based on Industry Type for all Firm Years
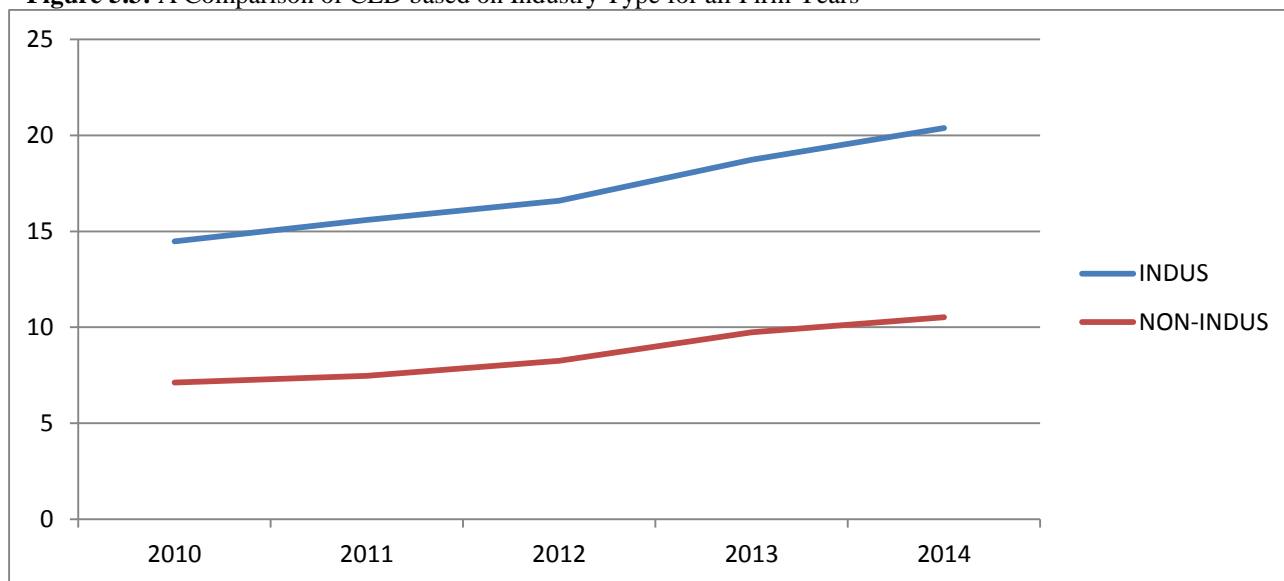
Tables 5.14 to 5.18 below (pages 156, 158, 159, 161, 163, respectively) present comparisons of the levels of CED with all the 55 individual environmental information items analysed between industrial and service sectors. The justification is to highlight the environmental issues of the EDI that provide more insights for the significant variations observed in Table 5.8 between industrial and service sectors. The study sample is divided into 90 industrial firms and 90 service companies as described in section 4.4 of Methodology chapter. This has resulted in 90 businesses in each firm-year, where each industry has a total of 450 firm-year observations.

In line with the evidence obtained by examining the aggregate CED levels, there are considerable industrial differences in the levels of CED practices. For instance, Tables 5.14 to 5.18 present that in 53 (96.36%) out of the 55 disclosed environmental items, CED levels among industrial firms are more significant than service companies. In contrast, only one (1.8%) of the published environmental items does not show any significant difference in CED levels between industrial and service sectors. This environmental element is *undertaking of wildlife conservation* with completed non-disclosure among all industries (see Table 5.15, p158). Also, one item (1.8%) out of the 55 disclosed items indicated higher published information by service firms (2.2%) than industrial companies (1.1%). This item is related to *the indirect use of energy* (see Table 5.16, p159).

Table 5.14: A Comparison of CED Levels with the Environmental Policy Items in the EDI based on Industry Type.

Individual items of environmental policy sub-index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV
General statements of "the firm will or the firm does" nature	98.22	88.89	98.89	88.89	97.78	91.11	97.78	96.67	97.78	96.67	98.89	92.45
Actual statement of policy	82.22	77.78	82.22	77.78	82.22	78.89	81.11	81.11	82.22	83.33	83.33	79.78
Statements are demonstrating that pollution caused from firm's operations will be or has been reduced	33.56	2.22	26.67	6.67	32.22	10.0	35.56	11.11	36.67	11.11	36.67	8.22
Disclosing polices of firm's energy	4.00	0.00	2.22	0.00	2.22	0.00	3.33	0.00	4.44	0.00	7.78	0.00
The assessment of Investments to involve such concerns towards the surrounding environment	29.78	11.11	20.0	8.89	28.89	14.44	34.44	15.56	31.11	16.67	34.44	13.33

Furthermore, Tables 5.14 to 5.18 suggest that the observed differences in CED levels between industrial and service firms could be more clarified by certain environmental items than others. In particular, nine (14.5 %) out of 55 used environmental elements in the EDI presented the highest significant variability between industrial and service firms.

For these items, the variability between the average industrial and service companies is between 30% and 20% points. These environmental items are *Statements demonstrating that pollution caused by firm's operations will be or has been reduced* (see Table 5.15, p158), *The assessment of Investments to involve such concerns towards the surrounding environment* (see Table 5.17, p161), *The management of waste* (see Table 5.15, p158), *Emissions & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve* (see Table 5.15), *Products & product development, involving products that assist in protecting the environment* (see Table 5.15), *The information of water discharge* (see Table 5.15), *Provisions, Contingencies* (see Table 5.18, 163), *Training related to environmental management and environmental accounting for employees, accountants and managers* (see Table 5.18) and *Allocation record of particular fund* (see Table 5.17, p161).

For instance, although on average, 43.55% of industrial firms disclosed information regarding *waste management*; only 23.33% of the service companies have disclosed this item (see Table 5.15). Similarly, while 39% of industrial enterprises have allocated fund to protect the environment, only 17.78% of the non-industrial groups disclosed information indicated this item, a variability of 21.3 percentage point (see Table 5.17). These results also recommend a high level of variability has been recorded within environmental process-product items among the EDI sub-indices based on industry type at the regional scale.

Table 5.15: A Comparison of CED Levels with the Individual Items included in the Environmental Pollution Sub-index based on Industry Type.

Individual items of Environmental product-process sub-index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV
The management of waste(s)	43.55	23.33	31.11	27.78	37.78	28.89	43.33	32.22	52.22	34.44	53.33	29.33
Eco efficiency	15.11	3.33	11.11	10.00	14.44	8.89	13.33	10.0	15.56	15.56	21.11	9.56
Emissions & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	52.67	31.11	46.67	40.00	52.22	45.56	47.78	45.56	54.44	51.11	62.22	42.67
Climate change, carbon sequestration.	7.33	3.333	3.33	1.11	4.44	3.33	7.78	3.33	11.11	3.33	10.0	2.89
Products & product development, involving products that assist in protecting the environment.	24.89	3.33	18.89	4.44	24.44	5.56	23.33	6.67	30.0	8.89	27.78	5.78
The information of air emission.	22.22	6.67	16.67	4.44	20.00	7.78	22.22	7.78	24.44	11.11	27.78	7.55
The information of water discharge.	27.33	2.22	18.89	1.11	21.11	5.56	27.78	6.67	31.11	8.89	37.78	4.89
Research conducting on new production approaches that used to reduce the environmental pollution.	4.67	0.00	3.33	0.00	3.33	0.00	3.33	1.11	6.67	1.11	6.67	0.44
The technologies of pollution prevention.	9.11	2.22	5.56	2.22	10.00	1.11	10.00	2.22	10.0	3.33	10.0	2.22
The control of industrial process pollution.	9.55	3.33	5.56	2.22	8.89	3.33	11.11	3.33	10.0	3.33	12.22	3.11
The reductions of business operations pollution.	5.56	1.11	3.33	1.11	4.44	2.22	6.67	2.22	6.67	3.33	6.67	2.00
The disposal information of Solid waste(s).	2.00	0.00	2.22	0.00	2.22	0.00	1.11	0.00	1.11	0.00	3.33	0.00
Natural resources conservation.	10.89	3.33	8.89	5.56	8.89	3.33	11.11	6.67	11.11	6.67	14.44	5.11
The plant of waste products Recycling.	4.89	0.00	3.33	0.00	4.44	0.00	3.33	1.11	6.67	2.22	6.67	0.67
The plant of effluent treatment installation.	8.89	0.00	6.67	0.00	7.78	0.00	7.78	1.11	10	1.11	12.2	0.44
The programs of Land forestation and reclamation.	4.89	3.33	4.44	2.22	4.44	3.33	3.33	3.33	5.56	4.44	6.67	3.33
The conservation of raw materials.	1.55	1.11	1.11	2.22	1.11	1.11	2.22	2.22	1.11	2.22	2.22	1.78
Total direct and indirect greenhouse gas emissions.	3.11	0.00	3.33	0.00	3.33	0.00	2.22	0.00	3.33	0.00	3.33	0.00
Initiatives to reduce greenhouse gas emissions.	6.89	0.00	4.44	0.00	7.78	0.00	7.78	1.11	7.78	1.11	6.67	0.44
Emissions of ozone-depleting substances by weight.	3.77	0.00	2.22	0.00	3.33	0.00	4.44	0.00	4.44	0.00	4.44	0.00
Undertaking of wildlife conservation.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noise	1.11	0.00	1.11	0.00	1.11	0.00	1.11	0.00	1.11	0.00	1.11	0.00

Table 5.16: A Comparison of CED Levels with the Environmental Energy Items in the EDI based on Industry Type

Individual items of the environmental energy sub-index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV
The conservation and the saving of energy.	35.78	24.44	32.22	26.67	32.22	27.78	31.11	40	38.89	42.22	44.44	32.22
Use/ exploration/ development of new sources, insulation, efficiency etc.	10.22	5.56	10.0	5.56	8.89	5.56	10.0	7.78	10.0	6.67	12.22	6.23
Waste materials utilization for energy conservation.	3.33	1.11	3.33	1.11	3.33	1.11	3.33	1.11	3.33	1.11	3.33	1.11
Initiatives to reduce the consumption of energy.	13.56	1.11	10.0	1.11	12.22	2.22	14.44	2.22	15.56	2.22	15.56	1.78
The Voicing of firm's concern about the shortage of energy.	7.11	0.00	5.56	0.00	4.44	0.00	6.67	0.00	7.78	0.00	11.11	0.00
Direct use of energy.	2.89	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	5.56	2.22
Indirect use of energy.	1.11	2.22	1.11	1.11	1.11	2.22	0.00	2.22	1.11	2.22	2.22	2.00
Energy saving's disclosure caused by product recycling.	5.56	0.00	5.56	0.00	5.56	0.00	5.56	0.00	5.56	0.00	5.56	0.00
Disclosing increased energy efficiency of products.	6.89	0.00	7.78	0.00	6.67	0.00	6.67	0.00	5.56	0.00	7.78	0.00
Receiving awards for the programmes of energy conservation.	0.89	0.00	1.11	1.11	1.11	0.00	0.00	0.00	1.11	0.00	1.11	0.22

In the second level, 12 items (21.8%) out of the 55 environmental elements exhibited the second high significant variability in CED provided by industrial and service firms. For these environmental issues, the variability between industrial and service companies is between 12% and 20%. These items are *General statements of "the firm will or the firm does" nature*, *Actual statement of policy*, *Eco-efficiency*, *The information of air emission* (see Table 5.14, p132), *The conservation and the saving of energy*, *Initiatives to reduce the consumption of energy* (See Table 5.16, p135), *The discussions of areas with economic / financial impacts*, *The analysis of economic- environmental interaction*, *Environmentally related loans*, *costs of purchasing, grants and installing new environmental friendly equipment & machines* and *consultancy costs & maintenance* (see Table 5.17, p137), *Environmental Education*, *Environmental Awards and Partnerships between environmental research institutions and businesses* (see Table 5.18, p139).

For example, although on average, 19.3% of the industrial firms have disclosed information regarding *Environmental education* item, only 7.7 % of the service firms revealed this item with 11.6% variability (see Table 5.18). Also, on average 5.6% % of the service firms disclosed information regarding *environmental awards* in relation to 22.5% by industrial firms, a difference of 16.9 percentage points (see Table 5.18). These findings suggest that environmental financial and environmental other related information items have achieved the highest levels of variation between the industrial and service firms.

The remaining environmental items, specifically 34 (61.8%) out of 55 items included in the main EDI presented less than 10 % variability significance between all the industrial and service firms (e.g. *Climate change*, *carbon sequestration*, *Natural resources conservation*, *Indirect use of Energy* and *Environmental Research*).

For instance, while on average, 10.9% of the industrial firms have disclosed the *Conservation of Natural Resources*; only 3.3% of service companies have disclosed this item (see Table 5.15). Likewise, 0% of service firms published information about *Emissions of ozone-depleting substances by weighing*, in relation to 3.7% by industrial companies, a difference of 3.7 percentage points (see Table 5.17).

Table 5.17: A Comparison of CED Levels with the Environmental Policy Items in the EDI based on Industry Type

Individual items of the environmental financial sub-index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV
The discussions of areas with economic / financial impacts.	26.44	8.89	24.44	11.11	22.22	10	24.44	14.44	28.89	18.89	32.22	12.67
The discussion of economic-environmental interaction.	12.67	5.56	10	6.67	11.11	6.67	12.22	7.78	14.44	7.78	15.56	6.89
Provisions, contingencies.	64.44	43.33	53.33	37.78	54.44	45.56	61.11	58.89	75.56	63.33	77.78	49.78
Environmentally related loans, purchasing new environmental friendly machines and consultancy costs.	15.33	4.44	14.44	5.56	13.33	3.33	11.11	6.67	16.67	6.67	21.11	5.33
Previous & present expenditure for pollution control.	4.44	1.11	4.44	1.11	3.33	2.22	2.22	3.33	3.33	2.22	8.89	2.00
Expenditures estimated in future for pollution control facilities and equipment.	2.67	0.00	2.22	0.00	2.22	0.00	1.11	0.00	2.22	0.00	5.56	0.00
Allocation record of specific fund.	39.78	17.78	34.44	16.67	37.78	24.44	42.22	32.22	42.22	32.22	42.22	24.67
Expenditures estimated in future for pollution control facilities and equipment.	2.67	0.00	2.22	0.00	2.22	0.00	1.11	0.00	2.22	0.00	5.56	0.00
Allocation record of specific fund.	39.78	17.78	34.44	16.67	37.78	24.44	42.22	32.22	42.22	32.22	42.22	24.67

Tied to the evidence obtained from investigating EDI at aggregate levels, Tables 5.14 to 5.18 presented that CED percentages with the individual environmental items increased over time across both industrial and service firms.

Nevertheless, the incremental trend of CED has been noted to be stable in both types of industries. For instance, only 31.11% of the industrial firms disclosed *waste management information* in 2010. It increased to 37.78%, 43.33%, 52.22% and   53.33% in 2011, 2012, 2013 and 2014, respectively (see Table 5.15, p134). Similarly, 27.78 % of service firms disclosed *waste management information* in 2010. It increased to 28.89%, 32.22%, 34.44% and 29.33% in 2011, 2012, 2013 and 2014, respectively.

Also, the variability in CED based on sector type suggests that industrial firms are disclosing the environmental items earlier than service firms. For instance, the industrial firms have disclosed *environmental research* item in the whole study period by mean values are 5.56, 7.78, 8.89 and 13.33 in 2010, 2011, 2012, 2013 and 2014, respectively (Table 5.18, p139). In contrast, amongst the service sampled firms, the item of *environmental research* was only disclosed in 2011, and 2014 with mean values are 1.11 and 0.2, respectively. This result could be associated with the fact that industrial firms are environmentally sensitive and facing greater pressure to report their environmental information than services firms.

Generally speaking, the findings of the current study are consistent with previous CED empirical evidence regarding sector type (Ghazali, 2007; Haniffa & Cooke, 2002; Lock & Seele, 2015; Thompson & Cowton, 2004) which stated a significant positive association between the type of sector and annual reports disclosure of environmental information.

 However, firms in different industrial and services sectors were not responsible for precisely the same areas. Thus, the motives for disclosure and non-disclosure in some specific categories (sub-indices) might have been their irrelevance. Therefore, EDI coverage needed researcher judgment. Nevertheless, the number of categories was based on previous CED literature. These results will be comprehensibly discussed in chapter eight.

Table 5.18: A Comparison of CED Levels with the Environmental Other Items in the EDI based on Industry Type

Individual items of the environmental other sub-index	CED levels between Large and Small Firms (%)											
	All firms year		2010		2011		2012		2013		2014	
	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV	IDUS	SERV
Environmental education	19.33	7.78	16.67	8.89	18.89	8.89	16.67	16.67	22.22	16.67	22.22	11.78
Environmental Training for employees, accountants and managers.	32.00	6.67	26.67	8.89	31.11	8.89	32.22	10.0	32.22	16.67	37.78	10.22
Environmental awards.	22.45	5.56	18.89	4.44	18.89	4.44	21.11	7.78	25.56	6.67	27.78	5.78
Environmental research.	8.44	0.00	5.56	0.00	7.78	1.11	6.67	0.00	8.89	0.00	13.33	0.22
Partnerships between environmental research institutions and businesses.	21.56	8.89	15.56	10.00	16.67	10.00	20.0	13.33	26.67	15.56	28.89	11.56
A moral responsibility enhancement affected by Islamic principles.	12.22	15.56	12.22	15.56	12.22	15.56	12.22	15.56	12.22	15.56	12.22	15.56
Maintenance the balance of environment.	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00
Protect & enhance future generation's well-being.	9.78	3.33	5.56	2.22	5.56	4.44	8.89	7.78	10.0	10.0	18.89	5.55
Designing facilities which are harmonious with the surrounding environment.	0.67	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00
Contribution to beautify the environment in terms of art/sculptures or cash.	1.33	2.22	1.11	2.22	1.11	3.33	1.11	4.44	1.11	4.44	2.22	3.33
Environmental studies	1.33	0.00	1.11	0.00	1.11	0.00	0.00	0.00	0.00	0.00	4.44	0.00

5.5 Conclusion

This chapter has discussed the Environmental Disclosure Index (EDI) that has been employed to measure CED provided by the sampled MENA companies. It achieved two key objectives. First, it has attempted to offer a detailed description of the EDI using a variety of descriptive statistics. In this sense, this chapter provided a comprehensive descriptive analysis for the EDI in the MENA region based on the full study sample at both country and regional levels. In general, the results showed substantial variability in the levels of CED among the sampled firms.

The findings suggest a relatively low level of CED in the Arab MENA region, particularly in Tunisia. The other countries have rather similar levels of disclosure to each other, though there is evidence of higher disclosure in the 'leading' countries, Egypt and Saudi Arabia – in the latter case as a result of a faster-than-average rate of growth in disclosure over the period studied. There are also differences between companies, although size and sector were checked to see whether anyone category of the company was driving the increase in disclosure.

More sophisticated statistical analysis of the data should be capable of shedding further light on company differences. However, such analysis will not explain the trend in disclosure, some possible factors relating to which will be discussed in chapter eight (e.g. environmental legislation, FDI). It would be fair to say that the identification of significant growth in disclosure across the region is probably the key finding of the first piece of work in this study (exploratory stage), a finding that seems to apply whatever country, disclosure category or type of company is considered.

In the next chapter (chapter six), the central objective is to illustrate descriptive statistics, as well as to test the assumptions of estimating Ordinary Least Squares (OLS) models. Notably, descriptive statistics of the EDI, a set of independent variables, and control variables will be discussed and reported. The assumptions of the OLS model (discussed in chapter four) will then be tested.

Chapter Six: Descriptive Statistics and OLS Assumptions

6.1 Introduction

Chapter Six discusses the assumptions of Ordinary Least Squares (OLS) regression. It aims to attain three essential objectives. Firstly, it explains how outliers in the continuous dependent and independent variables have been dealt with. Secondly, it shows comprehensive descriptive statistics for the dependent variable (EDI) and the continuous independent variables. Finally, it seeks to test the assumptions of OLS regression relating to normality, linearity, auto-correlation, homoscedasticity and multicollinearity. The sections of this chapter are structured as follows. Section 6.1 documents a summary of detailed descriptive statistics for the dependent and independent variables. Section 6.2 seeks to examine the assumptions of OLS regression; Section 6.3 concludes the chapter.

6.2 Summary Descriptive Statistics of the Environmental Disclosure Index and Continuous Independent Variables

This section presents descriptive statistics of the dependent variable (EDI), the continuous independent and the control (exogenous) variables. Nevertheless, before illustrating these descriptive statistics, the next sub-section first discusses how outliers in EDI and the continuous independent variable have been treated.

6.2.1 Dealing with Outliers in the Environmental Disclosure Index and Independent Variables

There are extreme values in the proxies of some continuous variables in this study. The dependent variables are EDI, and its five sub-indices (i.e., environmental policy, environmental pollution, environmental energy, environmental financial and environmental other). As mentioned in chapter four, the independent continuous variables are Firm Size (SIZE) as measured by Total Assets (TA), Profitability (PROF) as measured by the ratio of Return on Assets (ROA), Leverage (LEV) as measured by Debt on Assets ratio (DOA) and three country-level governance indicators (i.e., voice and accountability (V&A), government effectiveness (GE), and control of corruption (CC)). Outliers were also presented in the continuous control variable, namely Gross Domestic Product (GDP). For example, the minimum (maximum) values for profitability (ROA) were 0.20 (-0.10). Similarly, the minimum and maximum values for DOA were 1.09 and 0, respectively. Arguably, regardless of being extreme value, some percentages seem to have less theoretical and economic logic. For instance, a DOA ratio more than 100% (109% or 1.09 in this study) is pointless theoretically. In theory, this could be a result of using a combination of equity and debt or a maximum of 100% equity or debt (Ntim, 2009).

Consequently, to minimise the outliers' effects and consistent with previous literature (e.g. Klapper & Love, 2004; Chhaochharia & Grinstein, 2009); the continuous variables that included certain calculations (i.e., EDI, five Sub-EDIs, TA, ROA, DOA) were winsorized at the levels of 5% and 95%. Particularly, all the 900 firm-year values of each continuous variable (dependents, independents and control) were classified into ascending order. The top and bottom 45 values (900*5%) of each continuous variable were substituted with the 46th and 855th values, respectively. The statistics that will be described and reported for the continuous variables are considered after the process of winsorisation. However, re-estimating EDI and its respective five sub-indices based on the winsorisation did not provide any better findings than those built on variables' actual values.

Several reasons are underlying the process of winsorisation (Gujarati, 1995; 2003). Firstly, the existence of outliers might extremely violate the assumptions of OLS technique which was estimated for the current study purposes. Secondly, winsorizing or excluding the extreme values is deemed to be as a standard technique within the voluntary disclosure literature (Black et al., 2006; Chhaochharia & Grinstein, 2007; Ntim, 2009). Furthermore, following previous research also (e.g., Brooks, 2004; Ntim, 2009), natural and rank log transformations have been applied to the continuous variables which have been collected as absolute values (i.e., V&A, GE, CC, and GDP) in order to decrease the problems of non-normality within these variables.

Table 6.1 below presents the summary of descriptive statistics for all the continuous variables for all the 900 firm years. Panel *A* of Table 6.1 contains descriptive statistics for the dependent variables (EDI), while Panels *B* to *F* of Table 6.1 show descriptive statistics for the five EDI sub-indices. Panels *G* to *M* presents the summary of the descriptive statistics for the continuous independent variables. Panel *N* presents summary descriptive statistics for the continuous control variable (GDP). Similar to the EDI, for each variable, the mean, standard deviation, skewness, kurtosis, minimum and maximum values were documented.

6.2.2 Descriptive Statistics of the Environmental Disclosure Index (EDI)

Panel *A* of Table 6.1 presents the summary of descriptive statistics for the dependent variable (EDI). It demonstrates that EDI ranges from a minimum 0 to a maximum 0.56 with an average 0.13 for the combined sample. The standard deviation of EDI is 0.10 indicating a significant variation in environmental disclosures amongst the sampled MENA companies. In line with the normal histogram plot suggestions, the skewness and kurtosis statistics suggest that the dependent variable (EDI) is normally distributed.

Table 6.1: Summary Descriptive Statistics of the Dependent, all Continuous Independent Variables and Control Variable based on all 900 Firm-year Observations.

Dependent, Continuous Independent & Control Variables	Mean	Std. Dev.	Skewness	Kurtosis	Minimum	Maximum
Panel A: EDI All	0.13	0.10	1.42	2.30	0.00	0.56
2010	0.11	0.08	1.59	3.00	0.00	0.49
2011	0.12	0.09	1.49	2.88	0.00	0.51
2012	0.13	0.09	0.05	-0.65	0.00	0.50
2013	0.14	0.10	-0.03	-0.54	0.00	0.54
2014	0.16	0.11	1.28	1.55	0.00	0.56
Panel B: Sub-EDI-1 All	0.44	0.17	0.07	0.89	0.00	0.80
2010	0.41	0.16	-0.22	1.79	0.00	0.80
2011	0.43	0.18	-0.15	0.97	0.00	0.80
2012	0.45	0.18	-0.01	0.62	0.00	0.80
2013	0.46	0.17	0.34	0.62	0.00	0.80
2014	0.47	0.17	0.30	0.46	0.00	0.80
Panel C: Sub-EDI-2 All	0.09	0.11	1.87	4.06	0.00	0.59
2010	0.07	0.09	1.96	4.36	0.00	0.45
2011	0.08	0.10	2.21	6.62	0.00	0.59
2012	0.09	0.11	1.96	4.87	0.00	0.59
2013	0.10	0.12	1.70	3.11	0.00	0.59
2014	0.11	0.12	1.54	2.27	0.00	0.59
Panel D: Sub-EDI-3 All	0.07	0.11	2.07	4.20	0.00	0.50
2010	0.06	0.11	2.39	5.77	0.00	0.50
2011	0.06	0.10	2.32	5.64	0.00	0.50
2012	0.06	0.11	2.21	4.84	0.00	0.50
2013	0.07	0.11	1.85	3.35	0.00	0.50
2014	0.08	0.12	1.78	2.98	0.00	0.50
Panel E: Sub-EDI-4 All	0.19	0.18	1.33	2.57	0.00	1.00
2010	0.16	0.17	1.53	3.77	0.00	1.00
2011	0.16	0.17	1.25	1.85	0.00	0.86
2012	0.18	0.17	1.12	1.50	0.00	0.86
2013	0.22	0.19	1.28	2.52	0.00	1.00
2014	0.24	0.20	1.41	2.76	0.00	1.00
Panel F: Sub-EDI-5 All	0.08	0.12	1.66	3.10	0.00	0.91
2010	0.07	0.11	1.81	3.01	0.00	0.45
2011	0.08	0.11	1.58	2.03	0.00	0.45
2012	0.08	0.12	1.52	1.55	0.00	0.45
2013	0.10	0.13	1.35	1.03	0.00	0.55
2014	0.12	0.15	1.62	3.72	0.00	0.91
Panel G: Firm size All	18.60	2.87	-0.16	-0.82	11.79	24.8
2010	18.54	2.84	-0.09	-0.80	12.32	24.73
2011	18.58	2.89	-0.16	-0.82	12.29	24.38
2012	18.64	2.87	-0.15	-0.82	12.25	24.8
2013	18.68	2.90	-0.18	-0.79	11.97	24.8
2014	18.60	2.87	-0.21	-0.81	11.79	24.8
Panel H: Profitability All	0.02	0.07	1.16	1.81	-0.10	0.20
2010	0.03	0.07	1.14	1.85	-0.10	0.20
2011	0.02	0.07	1.02	1.70	-0.10	0.20
2012	0.03	0.06	1.33	1.92	-0.10	0.20
2013	0.02	0.06	1.14	2.32	-0.10	0.20
2014	0.03	0.07	1.22	1.62	-0.10	0.20

Continuation of Table 6.1

Dependent, Continuous Independent & Control Variables	Mean	Std. Dev.	Skewness	Kurtosis	Minimum	Maximum
Panel I: Leverage All	0.22	0.31	1.77	1.85	0.01	1.09
2010	0.22	0.31	1.76	1.78	0.01	1.09
2011	0.23	0.31	1.76	1.85	0.01	1.09
2012	0.21	0.30	1.86	2.30	0.01	1.09
2013	0.22	0.31	1.74	1.84	0.01	1.09
2014	0.22	0.32	1.77	1.84	0.01	1.09
Panel G: V&A All	23.0	10.0	2.00	0.54	30.0	50.0
2010	20.0	9.00	-0.53	-0.93	40.0	31.0
2011	22.0	9.00	-0.61	-0.10	30.0	36.0
2012	24.0	10.	-0.52	0.52	30.0	42.0
2013	23.0	10.0	0.12	0.52	30.0	44.0
2014	24.0	12.0	0.58	0.66	30.0	50.0
Panel L: GE All	58.0	15.0	-0.30	0.33	20.0	90.0
2010	61.8	10.7	-0.01	-0.73	43.0	78.0
2011	57.6	13.7	0.29	-0.73	36.0	82.0
2012	57.1	16.1	-0.40	0.34	23.0	83.0
2013	57.0	17.2	-0.35	0.17	21.0	83.0
2014	57.7	18.9	-0.22	-0.07	20.0	90.0
Panel M: CC All	56.0	14.0	0.30	0.53	28.0	91.0
2010	60.0	14.0	0.38	0.65	34.0	91.0
2011	54.0	14.0	0.40	0.50	28.0	82.0
2012	55.0	13.0	0.55	0.56	33.0	84.0
2013	55.0	13.0	0.40	0.81	32.0	84.0
2014	56.0	13.0	0.11	0.60	32.0	83.0
Panel N: GDP All	0.1106	0.0146	-1.46	1.17	0.07	0.13
2010	0.1089	0.0145	-1.37	1.34	0.07	0.12
2011	0.1093	0.0142	-1.32	1.38	0.07	0.12
2012	0.1107	0.0146	-1.28	1.29	0.07	0.12
2013	0.1117	0.0148	-1.25	1.13	0.07	0.13
2014	0.1124	0.0147	-1.26	1.10	0.07	0.13

Notes: The skewness and kurtosis statistics in columns 3 and 4, respectively, are the test for the normal distribution. The data is regarded to be within the normal distribution if the standard skewness is within ±1.96 and standard kurtosis of ±3. EDI is Environmental Disclosure Index that Adopted to measure CED in MENA firms and considered a dependent variable. Sub-EDI-1 is the First sub-index for EDI and refers to environmental policy category. Sub-EDI-2 is the second sub-index of EDI and indicates the environmental pollution category. Sub-EDI-3 is the third sub-index and refers to environmental energy category. Sub-EDI-4 is the fourth sub-index and represents the environmental, financial category. Sub-EDI-5 is the fifth sub-index of EDI and indicates the other related environmental information category. V&A is voice and accountability. GE is government effectiveness indicator. CC is control of corruption indicator, and GDP is the Gross Domestic Product.

For instance, the skewness (absolute critical value for accepting skewness is ±1.96) statistic of 1.42 for the EDI points out that the distribution departs from symmetry within a normal left tail. Moreover, the statistics of kurtosis (the absolute critical value for rejecting kurtosis is three) of 2.30 indicating the rejection of the null hypothesis which assumes that the EDI is mesokurtically distributed. However, there is a positive sign means that the values of EDI have longer and cluster more tails than if normally distributed. As has been debated in chapter four (methodology chapter), the mild nature

of the characteristics of non-normal distributional depicted by the variables (in comparison with a normal distribution) were tied with the documented results of prior studies that have conducted OLS regression (Cheung & Wei, 2006; Francoeur & Labelle, 2008; Francoeur, Labelle, & Sinclair-Desgagné, 2008; Haniffa & Hudaib, 2006; Ntim, 2009). This point suggests that it could be statistically supportable to carry out the estimations of OLS regression.

Concerning the five sub-indices of the main EDI, their descriptive statistics show a substantial level of variability, and they were normally distributed. For instance, environmental policy sub-index (Sub-EDI-1) ranges from a minimum 0 to a maximum 0.80 with a mean value 0.44. This indicates that environmental policy items have been considerably disclosed amongst MENA firms. Similarly, the standard deviation of sub-EDI-1 is 0.17 referring to a variation in the reported environmental policy elements in the region. The skewness and kurtosis suggest that sub-EDI-1 is normally distributed with 0.07 and 0.89, respectively. Furthermore, the panels *B* to *F* recommend that environmental policy category was the most disclosed amongst EDIs with 0.44 mean value. By contrast, environmental, energy sub-index is the least published index with an average of 0.07.

6.2.3 Descriptive Statistics of the Continuous Independent Variables

The continuous independent variables are illustrated in Panels *G* to *M* of Table 6.1. Panel *G* of Table 6.1 suggests that the Total Assets (TA) after log transformation and winsorisation range from a minimum of 11.79 to a maximum of 24.8 with an average of 18.6l for the overall sample period. The standard deviation of 2.87 is indicating less variability in firm size than EDI. The respective five-year annual means of TA have slightly changed from 18.54 in 2010 and 18.60 in 2014. It is also in line with the findings of prior MENA studies (Akrout & Othman, 2013). Consistent with the propositions of the normal histogram plot, the skewness statistic of -0.16 for the firm size (TA) indicates that the distribution is departing from symmetry with a longer than normal left tail. The kurtosis of -0.82 indicates that the null hypothesis that the TA is mesokurtically distributed could not be rejected. There is a negative sign in this result indicating that the clusters of TA values have shorter tails and less than those of a normal distribution.

Panel *H* of Table 6.1 presents the profitability of firms operating within MENA region. Over the years of this study, Panel *H* shows that the profitability of the sampled firms was the highest in 2014 with 0.03 mean value. In contrast, the least average value of profitability was scored in 2011 with 0.02. This point advises that the economies of MENA countries might have poorly performed in 2011, but the markets were slightly improved in 2014, but still at a low level of performance. These insights could be associated with the recent political and economic crises arising from the *Arab Spring* post-

2011 in the region (Avina, 2013; Baumgartner, 2014). Overall, the average of the profitability is consistent with those stated by previous MENA studies. For example, Akrout and Othman (2013) reported an average ROA of 1.98%, for a cross-country sample in 2010. Furthermore, after the winsorizing process, the profitability ranged from a minimum of -10 to a maximum of 20% with an average 2% for all firm-years. The standard deviation of profitability is 0.07, suggesting less variability in profitability among the sampled firms. Similarly, in line with the propositions of the normal histogram plot, the skewness statistic of 1.16 for the profitability (ROA) indicates that the distribution departs from symmetry with a longer than a normal left tail. The kurtosis of 1.81 points out that the null hypothesis that the ROA is mesokurtically distributed could not be rejected.

Similarly, Panel *I* of Table 6.1 shows the firms' leverage as a measured by the ratio of Debt to Assets (DOA) in the period of study. It presents that the average DOA has slightly increased from 0.22 in 2010 to 0.23 in 2011 and returned to be 0.23 in 2014. The DOA after the process of winsorization has ranged from a minimum of 0.01 to a maximum of 1.09 with an average 0.22 for the combined sample. The standard deviation of DOA is 0.31, indicating variability in the level of leverage amongst the sampled firms. Also, linked to the normal histogram plot suggestions, the skewness statistic of 1.77 for the leverage (DOA) indicates that the distribution departs from symmetry with a longer than a normal left tail. The kurtosis of 1.85 suggests that the null hypothesis that the DOA is mesokurtically distributed could not be rejected.

Panels *G* to *M* of Table 6.1 illustrate summary descriptive statistics for the country-level governance indicators (i.e., voice and accountability, government effectiveness and control of corruption) scored based on Kaufmann et al. (2011) in years from 2010 to 2014. The statistics of country-level variables indicate a considerable variability and normality in the distribution. For example, the mean value of voice and accountability (V&A) has steadily increased from 20 in 2010 to 24 in 2014. The average of V&A is 23 over the entire sample period. The standard deviation of V&A is 10, reflecting a high level of disparity compared to other independent variables. Consistent with the normal histogram plot suggestions, the statistics of skewness of 0.02 and kurtosis of 0.54 for V&A have not rejected the null hypothesis that the V&A is mesokurtically distributed. Similarly, the average of control of corruption (CC) indicator is 56 over the whole sample period. The standard deviation of CC is 14 representing a significant level of variability in the corruption amongst MENA countries during the period of study (from 2010 to 2014). Also, the skewness of 0.30 and kurtosis of 0.53 for CC suggest according to the normal histogram plot propositions that CC data has normally been distributed.

Finally, Panel *N* reports summary descriptive statistics for the continuous control variable which is the Gross Domestic Product (GDP) of MENA economies. In this sense, Panel *N* shows that the average GDP after transformation and winsorization has steadily increased from about 0.1089 in 2010 to 0.1124 in 2014. The average of GDP was 0.1106 over the entire sample period. The standard deviation of GDP is 1.46, indicating less variation compared with the independent variables. Consistent with the normal histogram plot suggestions, the skewness statistic of -1.46 for the GDP indicates that the distribution departs from symmetry with longer than a normal right tail. The kurtosis of 1.17 has not rejected the null hypothesis that the GDP is mesokurtically distributed.

The next section is related to testing the assumptions of OLS, as well as presenting the findings of bivariate correlation analysis.

6.3 Tests of OLS Assumptions and Bivariate Correlation Analyses

As has been discussed in chapters four and five of this thesis, the technique of OLS multivariate regression is employed to examine all the hypotheses of this study. Hence, OLS assumptions of normality, linearity, homoscedasticity, multicollinearity and auto-correlation are reviewed. First, by carrying out a matrix of correlation amongst the study variables, the assumption of multicollinearity is tested. Table 6.2 presents a correlation matrix for the EDI and all the independent variables. As was discussed above, the statistics of skewness and kurtosis described in Table 6.1 proposed a mild non-normal behaviour amongst the measured variables. Table 6.2 indicates both coefficients of parametric correlation (Pearson) in the bottom left half and non-parametric correlation (Spearman) in the upper right half of the table. The coefficients of both the non-parametric and parametric correlations were very comparable. The parallel nature of the coefficients of non-parametric and parametric correlation suggests that any residual non-normal distribution in the study variables could be mild, as in some previous studies (Cho, Michelon, & Patten, 2012; Cormier et al., 2004; Hassan & Marston, 2010; Lu & Abeysekera, 2014; Webb et al., 2012). This point indicates that it could be statistically acceptable to use the technique of OLS to evaluate the stated structural equations. Apart from the EDI and its sub-indices[16], correlations amongst the variables were relatively small, signifying that no serious problems of multi-collinearity remain.

Furthermore, Variance Inflation Factor (VIF), tolerance statistics, eigenvalues, variance proportions and condition indices which are testing multi-collinearity problems were computed for both the dependent and independent variables in this study. A VIF statistic value less than ten indicates non-

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[16] The EDI and its sub-indices (SEDI1, SEDI2, SEDI3, SEDI4, and SEDI5) are not regressed in one model, where they all represent dependent variables in different models. This justifies why they are highly correlated to each other.

existence of severe multicollinearity problems (Gujarati, 2003). Also, Tolerance statistic close to zero means that multicollinearity can be a threat, whereas a value close to one suggests that there is little multicollinearity (Gujarati, 2003) (for brevity reasons not presented here).

In this sense, Field (2009) argued that multicollinearity is deemed to be a problem if Tolerance value is below 0.1. Tolerance values are between 0.877 and 0.313 indicating no multicollinearity problems in the variables. Also, there was no VIF value above the critical value of ten for all study variables, as the FIV values were between 3.192 and 1.051. In this context, Brooks (2003) suggests that eigenvalues more than zero implies that multicollinearity could not be a serious concern. However, Gujarati (2003) indicated that condition indices less than thirty critical value suggest that multicollinearity could not be a severe problem. Similarly, apart from the profitability, all the eigenvalues were more than the critical value of zero, although there was no condition index more than thirty (for brevity sake not revealed here). Consistent with the suggestions of the coefficients of parametric and non-parametric correlation in Table 6.2 below, the variance proportions correlation mostly show low correlation levels amongst the variables (not described here for brevity purposes).

The statistics of collinearity which include the matrices of parametric and non-parametric correlations, eigenvalues condition indices, variance proportions and VIF and tolerance statistics imply that the multicollinearity levels in the variables seem to be statistically acceptable.

Apart from the analysis of correlation, scatter plots examination, leverage values, Cook's distances, Durbin-Watson, skewness and kurtosis tests were carried out to examine for auto-correlation, homoscedasticity, normality and linearity assumptions (for brevity reasons, not shown here). First, scatter plots, Cook's distances and leverage values have been computed to test for outliers' existence that could result in nonlinearity and heteroscedasticity in the variables even after winsorisation process. Scatter plots suggest no longer outliers were present, with the distributions appearing somewhat linear and normal. Moreover, if the Leverage value and Cook's distance were greater than the critical value of one, they would imply the existence of outliers (Maddala & Yin, 1997). However, none of the Leverage values and Cook's distances were greater than one. On average the residual statistics indicate non-presence of severe outliers. Second, to examine the possible existence of autocorrelation problems, the critical values of Durbin-Watson of two suggest that successive residual terms are, averagely, much diverse in value to one another (Brooks, 2003; Gujarati, 2003). In this study, the statistics of computed Durbin-Watson test were either close to or above one. This point suggests the existence of moderate rather than severe problems of autocorrelation.

Table 6.2: Correlation Matrix of EDI Quantity, Sub-indices and All-Independent Variables for All (900) Firm Year.

	TA	ROA	DOA	BBC	INDUS	BIG 4	GCC	V & A	GE	CC	GDP	EDI	SEDI1	SEDI2	SEDI3	SEDI4	SEDI5
TA		0.035	-.070*	.185**	-.04	.488**	.259**	-.163**	.155**	0.064	-0.022	.666**	.336**	.589**	.397**	.526**	.560**
ROA	0.034		.148**	.098**	.121**	.118**	.231**	.082*	.131**	.193**	-.128**	.072*	.191**	.027	-0.004	.067*	.077*
DOA	-.127**	.183**		.128**	-.004	.074*	.136**	.088**	.134**	.329**	0.014	0.049	.171**	.041	0.019	-0.008	0.033
BBC	.169**	.134**	.222**		.057	.598**	-.518**	.352**	.492**	-.074*	.187**	.501**	.105**	-.064	.101**	.252**	.252**
INDUS	-0.042	.112**	-0.001	.000		.135**	.000	.000	.000	.000	-0.027	.298**	.303**	.254**	.130**	.257**	.184**
BIG 4	.483**	.106**	0.027	0.057	.135**		.141**	0.048	.148**	.194**	.194**	.447**	.233**	.442**	.299**	.327**	.276**
GCC	.272**	.228**	.251**	.598**	.000	.141**		-.347**	.615**	.452**	-0.024	.114**	.313**	.041	-0.05	0.043	.221**
V&A	-.193**	0.039	0.057	-.508**	.000	0.029	-.398**		-.223**	0.032	-0.021	-.136**	-.208**	-.028	-0.015	-.133**	-.277**
GE	.197**	0.059	0.057	.182**	.000	.177**	.598**	-0.053		.686**	.174**	0.024	.115**	.002	.103**	0.063	0.007
CC	.158**	.091**	.152**	.220**	.000	.265**	.512**	.089**	.727**		.095**	-0.027*	.152**	-.012	-.125**	-.105**	0.033
GDP	0.029	-.073*	0.007	0.041	-0.023	.125**	0.057	-.088**	.174**	.066*		.074*	.144**	.068*	0.037	0.043	.174**
EDI	.586**	.115**	0.052	.196**	.350**	.406**	.083*	-.172**	0.075	-.069*	0.025		.576**	.884**	.628**	.726**	.732**
SEDI1	.334**	.183**	.138**	.497**	.311**	.243**	.319**	-.170**	0.055	.104**	.069*	.606**		.443**	.198**	.412**	.413**
SEDI2	.487**	.069*	0.049	.099**	.309**	.375**	-0.022	-0.064	.079*	-.067*	0.01	.911**	.454**		.614**	.509**	.532**
SEDI3	.313**	0.031	-0.042	-.103**	.192**	.261**	-.115**	0.013	-.113**	-.141**	0.049	.666**	.167**	.665**		.251**	.346**
SEDI4	.477**	.068*	0.017	.116**	.253**	.312**	-0.01	-.153**	.160**	-.167**	0.041	.722**	.410**	.535**	.256**		.501**
SEDI5	.529**	.123**	0.047	.248**	.240**	.272**	.257**	-.318**	0.046	0.05	.114**	.719**	.418**	.489**	.295**	.484**	

Notes: the bottom left half of the table shows the parametric correlation coefficients of **Pearson**, while the upper right half of the table shows the non-parametric correlation coefficients of **Spearman**. ** and * denote correlation is respectively significant at the levels 5% and 10%. Variables are defined as follows; total assets (TA), return on assets (ROA), debts on assets (DOA), British Business culture (BBC), Industry Type (INDUS), Type of auditor (Big 4), Sub-region (GCC), Voice and Accountability (V&A), Governance Effectiveness (GE), Control of Corruption (CC), Gross Domestic Product (GDP), Environmental Disclosure Index (EDI), Sub-EDI-1 "environmental policy" (SEDI1), Sub-EDI-2 "environmental pollution" (SEDI2), Sub-EDI-3, "environmental energy", (SEDI3), Sub-EDI-4, "environmental financial", (SEDI4) and Sub-EDI-5, "environmental other", (SEDI5).

Finally, the test of skewness and kurtosis is carried out to test for normality. Table 6.1 presents the statistics of skewness and kurtosis for all the continuous variables used in this study. The statistics of skewness rejects the null hypothesis which means that the variables are symmetrically distributed. Also, they are comparable to the stated findings of prior studies that applied similar OLS estimations (Francoeur et al., 2008; Haniffa & Hudaib, 2006; Ntim, 2009). This means that any residual non-normal distribution could be statistically supportable.

In contrast, the statistics of kurtosis test, in general, accept the null hypothesis that the variables are mesokurtically distributed. This result implies the non-presence of severe non-normal distribution in the variables of the current study.

Overall, the tests indicate that any residual non-normalities, non-linearities, heteroscedasticities and multicollinearities in the continuous variables of this study are not expected to result in serious violations of OLS models, and so it will be statistically suitable to carry out OLS regression analyses to investigate the association between the dependent and independent variables of the current study.

6.4 Conclusion

This chapter concentrated on discussing the descriptive statistics of the data and testing the assumptions of Ordinary Least Squares (OLS). It has achieved three key points. Firstly, it explained how outliers in the continuous variables were treated. The continuous variables (EDI, five Sub-EDIs, TA, ROA, DOA, V&A, GE, CC, and GDP) were winsorized at the levels of 5% and 95% in order to minimise the effects of outliers. Also, natural and rank log transformations have been applied to all continuous variables both before and after the process of winsorization to decrease the problems of non-normality.

Secondly, it provided descriptive statistics of the data including the dependent variable and the continuous independent and control variables. The statistics of kurtosis and skewness, in general, implied non-presence of severe non-normal distribution in the variables.

Finally, it sought to test the assumptions of OLS of normality, linearity, homoscedasticity, auto-correlation and multi-collinearity. Correlation matrices, leverage values, Cook's distances, Durbin-Watson, skewness, kurtosis, and tolerance statistics were highlighted. Overall, all these tests suggest no severe violations of the assumptions of OLS, and hence it is statistically applicable to conduct OLS regression. The next chapter will, thus, document the key empirical results of the estimated OLS regressions.

Chapter Seven: Statistical Analysis

7.1 Introduction

Chapter seven addresses three central objectives. First, the validity and reliability of the used methods will be discussed. Second, it presents the empirical results of this study. It examines whether better environmental disclosure is associated with independent variables employed from an institutional perspective. Second, the results of estimating OLS regression based on a model of EDI will be described and discussed. Third, the chapter reports the results of a series of additional tests in order to check the robustness or sensitivity of the main results. Mainly, this section subjects the empirical results to an extensive set of robustness tests, including estimating a lagged EDI model, an alternative (weighted) index model, a firm-level fixed-effects model and finally a Two-Stage Least Squares (2SLS) model.

7.2 Construct Validity and Reliability

Construct validity of the EDI measurement concentrates on consistency with evidence from previous literature and theoretical expectations. Correlation analysis is suggested as a method by which validity could be established (Aburaya, 2012; Sekaran, 2003). The coefficients of correlation were used in previous disclosure studies to check whether the scores of EDI were valid or not (Ahmed & Courtis, 1999; Botosan, 1997; Cheng & Courtenay, 2006). In this sense, two tests were employed to validate the EDI. Crucially, the correlations between the EDI and its sub-indices have been applied (Ahmed & Courtis, 1999). Besides, the correlations between the EDI and relevant explanatory variables that determined in previous studies have been used to assess the validity of EDI (Aburaya, 2012; Botosan, 1997).

The findings of Pearson and Spearman correlations are shown in Table 7.1. Both coefficients present that the EDI and its sub-indices are highly correlated, which indicates how well the grouping scheme or classification has interpreted the total EDI score. Furthermore, it is estimated that a firm's environmental disclosure strategies are comparable as to the different EDI sub-indices (Botosan, 1997; Cheng & Courtenay, 2006). The findings also exhibit that the sub-indices are statistically correlated with each other.

Additionally, firm's characteristics such as firm size and industry type are considered among the primary determinants in clarifying the variation in environmental reporting according to previous environmental disclosure studies (Aburaya, 2012 Ahmed & Courtis, 1999; Botosan, 1997; Cheng & Courtenay, 2006; Sekaran, 2003). Hence, the correlation between the EDI and its sub-indices in one

side and each of firm size and industry type on the other side was investigated. The correlation matrix shows that EDI and its sub-indices are positively and significantly correlated to both of these two firm characteristics (see Table 7.1 below). These results confirm that the used EDI has a significant validity degree in that it consistently captures the CED practices in firms' annual reports.

High-quality tests are necessary to assess the reliability of data collected in a study. Cronbach's α is considered one of the most extensively used indexes of data reliability (Bland & Altman, 1997). Inappropriate application of Cronbach's α might lead to the condition in which either a scale or test is criticised for not producing reliable findings or the test is incorrectly discarded. To avoid this situation, an understanding of the perceptions of internal consistency and unidimensionality or homogeneity could assist in developing the use of alpha (Santos, 1999). Internal consistency must be examined before a test could be applied to ensure the reliability of data (Tavakol & Dennick, 2011). For scales or tests which are employed to compare between different groups (i.e., the five sub-indices of the EDI in the current study) Alpha values of 0.7 to 0.8 are considered as satisfactory (Bland & Altman, 1997). In the present study, α value is 0.79 which indicates an adequate level of reliability of the used EDI.

Also, the EDI that has been adapted, developed and applied in this study is regarded to be a reliable instrument, where comparable results obtained when the procedure of analysis was carried out again and by another researcher, in that, it considers the reproducibility and consistency sides of reliability (Krippendorff, 2004; Weber, 1990). Two primary methods to address the reliability of EDI have been commonly articulated in previous literature (Beattie & Thomson, 2007; Hooks & van Staden, 2011; Ntim, 2009). The first method has been achieved by using various coders and either representing little errors/discrepancies, which tackled through additional testing amongst coders. The alternative method is to use one coder, but reliability is reached by completing a pilot sample and solving any discrepancies. In this study, both methods were applied. To make sure that reliability and consistency are achieved, a pilot study of 20 annual reports from Tadawul Stock market (the Saudi stock exchange) representing both sectors (include five large and five small sized firms each) were independently coded by two investigators; each one coded ten annual reports issued in 2014. Collectively, no main changes arose with the agreement coefficient between both investigators adequately high at 0.79, observing that the satisfactory level ranges between 0.70 and 0.80 (Beattie & Thomson, 2007; Krippendorff, 2004; Milne & Adler, 1999). Moreover, the reliability and validity of the results of this study were improved by the fact that the researcher draws deeply on sub-indices or categories that already have been clearly defined in the CED literature.

Table 7.1: Correlation Matrix of EDI, Sub-indices and All-Independent Variables for All (900) Firm Year.

	TA	ROA	DOA	BBC	INDUS	BIG 4	GCC	V & A	GE	CC	GDP	EDI	SEDI1	SEDI2	SEDI3	SEDI4	SEDI5
TA		0.035	-.070*	.185**	-.04	.488**	.259**	-.163**	.155**	0.064	-0.022	.666**	.336**	.589**	.397**	.526**	.560**
ROA	0.034		.148**	.098**	.121**	.118**	.231**	.082*	.131**	.193**	-.128**	.072*	.191**	.027	-0.004	.067*	.077*
DOA	-.127**	.183**		.128**	-.004	.074*	.136**	.088**	.134**	.329**	0.014	0.049	.171**	.041	0.019	-0.008	0.033
BBC	.169**	.134**	.222**		.057	.598**	-.518**	.352**	.492**	-.074*	.187**	.501**	.105**	-.064	.101**	.252**	.252**
INDUS	-0.042	.112**	-0.001	.000		.135**	.000	.000	.000	.000	-0.027	.298**	.303**	.254**	.130**	.257**	.184**
BIG 4	.483**	.106**	0.027	0.057	.135**		.141**	0.048	.148**	.194**	.194**	.447**	.233**	.442**	.299**	.327**	.276**
GCC	.272**	.228**	.251**	.598**	.000	.141**		-.347**	.615**	.452**	-0.024	.114**	.313**	.041	-0.05	0.043	.221**
V&A	-.193**	0.039	0.057	-.508**	.000	0.029	-.398**		-.223**	0.032	-0.021	-.136**	-.208**	-.028	-0.015	-.133**	-.277**
GE	.197**	0.059	0.057	.182**	.000	.177**	.598**	-0.053		.686**	.174**	.024	.115**	.002	.103**	0.063	0.007
CC	.158**	.091**	.152**	.220**	.000	.265**	.512**	.089**	.727**		.095**	-0.027*	.152**	-.012	-.125**	-.105**	0.033
GDP	0.029	-.073*	0.007	0.041	-0.023	.125**	0.057	-.088**	.174**	.066*		.074*	.144**	.068*	0.037	0.043	.174**
EDI	.586**	.115**	0.052	.196**	.350**	.406**	.083*	-.172**	0.075	-.069*	0.025		.576**	.884**	.628**	.726**	.732**
SEDI1	.334**	.183**	.138**	.497**	.311**	.243**	.319**	-.170**	0.055	.104**	.069*	.606**		.443**	.198**	.412**	.413**
SEDI2	.487**	.069*	0.049	.099**	.309**	.375**	-0.022	-0.064	.079*	-.067*	0.01	.911**	.454**		.614**	.509**	.532**
SEDI3	.313**	0.031	-0.042	-.103**	.192**	.261**	-.115**	0.013	-.113**	-.141**	0.049	.666**	.167**	.665**		.251**	.346**
SEDI4	.477**	.068*	0.017	.116**	.253**	.312**	-0.01	-.153**	.160**	-.167**	0.041	.722**	.410**	.535**	.256**		.501**
SEDI5	.529**	.123**	0.047	.248**	.240**	.272**	.257**	-.318**	0.046	0.05	.114**	.719**	.418**	.489**	.295**	.484**	

Notes: the bottom left half of the table shows the parametric correlation coefficients of **Pearson**, although the upper right half of the table shows the non-parametric correlation coefficients of **Spearman**. ** and * denote correlation is respectively significant at the levels 5% and 10%. The EDI and its sub-indices (SEDI1, SEDI2, SEDI3, SEDI4, and SEDI5) are not regressed in one model, where they all represent dependent variables in different models. This justifies why they are highly correlated to each other. Variables are defined as follows; total assets (TA), return on assets (ROA), debts on assets (DOA), British Business culture (BBC), Industry Type (INDUS), Type of auditor (Big 4), Sub-region (GCC), Voice and Accountability (V&A), Governance Effectiveness (GE), Control of Corruption (CC), Gross Domestic Product (GDP), Environmental Disclosure Index (EDI), Sub-EDI-1 "environmental policy" (SEDI1), Sub-EDI-2 "environmental pollution" (SEDI2), Sub-EDI-3, "environmental energy", (SEDI3), Sub-EDI-4, "environmental financial", (SEDI4) and Sub-EDI-5, "environmental other", (SEDI5).

7.3 Multivariate Regression Analyses

Table 7.2 below contains a summary of the findings based on all firm years. The variables of concentration in this model are divided into three main groups. First, the dependent variable is Environmental Disclosure Index (EDI). Second, the independent variables are also divided into three categories are firm-specific characteristics (firm size, profitability, leverage, type of sector, and type of audit), country-specific governance indicators (voice & accountability, government effectiveness, and control of corruption), and finally region-specific pressures (business culture, and business environment or sub-region). Third, two control variables which are Gross Domestic Product (GDP) for each country and year dummies. Column 3 of Table 7.2 shows the findings of multivariate regression for the pooled sample, as well as for all firm-years in columns 4 to 8, respectively.

Column 3 of Table 7.2 reports that the adjusted R^2 is roughly 58%. This result indicates that 58% of the disparities in firms' EDI could be explained jointly by the three-level independent variables adopted for this study purposes. The coefficients on firm size, profitability, leverage, voice & accountability, control of corruption, business culture, type of industry, type of audit and sub-region are statistically significant. By contrast, the coefficients on government effectiveness and GDP are statistically insignificant. The positive coefficients are on firm size, profitability, leverage, government effectiveness, business culture, type of industry, type of audit and GDP, whereas, the negative coefficients are on voice & accountability, control of corruption and sub-region (business environment) variables (see column 3 of Table 7.1). These results suggest that the hypotheses 1, 2, 3, 5, 8, and 9 were accepted, but hypothesis 4, 5, 6, and 10 have been rejected (see Table 7.2). Therefore, the results report a significant positive relationship between EDI and each of firm size ($p \leq 0.01$), profitability ($p \leq 0.01$), leverage ($p \leq 0.01$), British business culture ($p \leq 0.01$), sector type ($p \leq 0.01$), and type of audit ($p \leq 0.01$). Findings also specify a strongly significant negative relationship between EDI with voice & accountability ($p \leq 0.01$), control of corruption ($p \leq 0.01$) and GCC ($p \leq 0.01$), and insignificant positive relationship with government efficiency.

The columns 4 to 8 of Table 7.2 suggest that the adjusted R^2 for each of the five years (from 2010 to 2014, respectively) is between 52% and 59%, and 58% of the combined sample. This is consistent, for instance, with the adjusted R^2 of 46% of Eakpisankit (2012) and 67% of Tadros (2014) for their pooled regressions of CED on different explanatory variables. Regarding the 10 independent variables, all the coefficients signs remain unchanged for the combined sample. The estimated coefficient on GDP as a control variable is positive and insignificant over the entire period of the sample. This implies that there is no relationship between GDP and EDI.

Table7.2: OLS Regression Findings for All Firm-Years in Comparison with the Same Model Regressed based on each Single Year Included in this Study from 2010 to 2014.

	Exp. Sign	All firm years	2010	2011	2012	2013	2014
Adjusted R^2		0.584	0.515	0.564	0.552	0.551	0.589
Durbin- Watson		0.388	1.055	0.948	1.057	1.074	1.066
No. of observations		900	180	180	180	180	180
Constant		-4.46 (0.00)***	-1.62(0.106)	-1.93(0.06)**	-0.864(0.389)	-1.217(0.225)	-1.337(0.183)
Panel A: **Continuous Independent Variables**							
Firm size	+	22.858(0.00)***	9.45(0.00)***	10.07(0.000)***	10.05(0.000)***	10.004(0.000)***	10.55(0.000)***
Profitability	+/-	1.935(0.053)***	0.46(0.648)	0.262(0.794)	0.479(0.633)	1.106(0.27)	2.039(0.043)**
Leverage	+/-	6.389(0.00)***	2.47(0.015)**	2.917(0.004)**	3.179(0.002)**	2.493(0.014)**	3.41(0.001)***
Voice and Accountability	+/-	-2.89(0.004)***	0.601(0.549)	0.537(0.592)	-2.194(0.03)**	-1.896(0.06)**	-3(0.003)***
Governance Effectiveness	+/-	1.590(0.12)	1.59(0.063)*	1.678(0.095)*	1.240(0.126)	1.432(0.154)	0.130(0.897)
Control of Corruption	+/-	-3.804(0.00)***	-2.067(0.04)**	-3.292(0.001)*	-1.789(0.075)*	-0.935(0.351)	-1.279(0.203)
Panel B: **Dummy Independent Variables**							
British Business Culture	+	4.87(0.00)***	2.29(0.023)**	3.435(0.001)**	0.907(0.366)	0.523(0.601)	1.001(0.319)
Sector Type	+	16.38(0.00)***	6.77(0.000)***	7.59(0.000)***	7.25(0.000)***	7.03(0.000)***	7.93(0.000)***
Auditor type	+	4.67(0.00)***	1.792(0.075)*	2.362(0.02)**	2.043(0.043)**	1.707(0.09)*	2.612(0.01)***
GCC	+/-	-4.65(0.00)***	-1.646(0.102)	-2.49(0.014)**	-2.42(0.017)**	-1.921(0.056)*	-2.294(0.023)**
Panel C: **Control Variable**							
GDP	.	1.29(0.212)	0.226(0.822)	0.137(0.892)	0.571(0.569)	0.722(0.471)	1.04(0.3)
2010 omitted	.	.	.	.	.	.	.
2011	.	0.291(0.772)	.	.	.	.	.
2012	.	1.852(0.064)*	.	.	.	.	.
2013	.	4.337(0.00)***	.	.	.	.	.
2014	.	6.98(0.00)***	.	.	.	.	.

Note: coefficients are in front of parenthesis. ***, ** and * denote p-value is respectively significant at the levels 1%, 5% & 10%. Also, the year 2011 has been excluded from the model.

Concerning the five sub-indices of EDI "categories", Table 7.3 below shows the results of estimating OLS models based on the EDI and its sub-indices. The findings suggest that there are significant positive associations between firm size and EDI of each of the five sub-indices of EDI at 1% significance level. Although profitability has a significant positive relationship with the disclosure of each of environmental policy (Sub-EDI-1) and Environmental other related information (Sub-EDI-5) at $p \leq 5\%$, it has a positive insignificant association with the disclosure categories of environmental pollution (Sub-EDI-2), environmental energy (Sub-EDI-3) and environmental financial (Sub-EDI-4). There is also significant positive associations between leverage and EDI sub-indices of environmental policy, environmental pollution, environmental financial and environmental other at 1% level of significance and 10% in the case of environmental energy sub-index. Concerning voice and accountability, it has a significant positive association with environmental policy category at 1% and significant negative relations with each environmental other, environmental financial, and environmental pollution categories at 1%, 5% and 10% levels of significance, respectively. However, voice and accountability variable has been insignificantly associated with environmental energy category. The results also report insignificant positive relationships between government efficiency on one side and the main EDI, the environmental pollution sub-index (SUB-EDI2), and the environmental energy category (SUB-EDI3) on the other side. However, GE has significant positive relations with environmental policy (SUB-EDI1) ($p \leq 0.1$), environmental financial (SUB-EDI4) ($p \leq 0.05$), and environmental others (SUB-EDI5) ($p \leq 0.05$).

Besides, the results state a negative significant relationship between control of corruption and EDI categories of each of environmental policy ($p \leq 0.05$), environmental pollution ($p \leq 0.01$), environmental energy ($p \leq 0.01$), environmental financial ($p \leq 0.01$), whereas the control of corruption is positively and significantly related to environmental another category ($p \leq 0.01$). This means that there is no relationship between CED and the control of corruption. As for business culture, it could be observed that it is positively and significantly associated with the sub-indices of the EDI of environmental policy ($p \leq 0.05$), environmental pollution ($p \leq 0.01$) and environmental financial related information ($p \leq 0.05$). Business culture nevertheless is found to be negatively and significantly related to environmental energy ($p \leq 0.05$) and has a positively insignificant association with other environmentally related information. Results also expose significant positive relationships between the type of sector and all of EDI sub-indices used in this study at 1% level of significance. Similarly, big 4 has positive and significant associations ($p \leq 0.01$) with all EDI categories except environmental policy category which is insignificantly and positively associated with big 4.

Table 7.3: OLS Regression Findings based on EDI Sub-indices.

	Exp. Sign	EDI	Sub-EDI-1	Sub-EDI-2	Sub-EDI-3	Sub-EDI-4	Sub-EDI-5
Adjusted R^2		.584	0.462	.454	0.226	0.435	0.493
Durbin-Watson		.388	0.616	0.492	0.452	0.613	0.698
No. of observations		900	900	900	900	900	900
Constant		-4.46 (0.00)***	2.169(0.03)**	-4.504(0.00)***	-2.81(0.005)***	-4.59(0.00)***	-0.956(0.34)*
Panel A: **Continuous Independent Variables**							
Firm size	+	22.858(0.00)***	9.125(0.00)***	16.85(0.00)***	9.29(0.00)***	16.42(0.00)***	17.16(0.00)***
Profitability	+/-	1.935(0.053)***	2.089(0.037)**	0.707(0.48)	0.712(0.477)	1.20(0.231)	2.47(0.014)**
Leverage	+/-	6.389(0.00)***	3.178(0.002)***	5.83(0.00)***	1.926(0.054)*	4.35(0.00)***	4.19(0.00)***
Voice and Accountability	+/-	-2.89(0.004)***	2.86(0.004)***	-1.69(0.091)*	-0.9(0.368)	-2.40(0.016)**	-5.55(0.00)***
Governance Effectiveness	+/-	1.590(0.12)	1.810(0.07)*	0.376(0.70)	0.608(0.553)	2.908(0.04)**	2.191(0.02)**
Control of Corruption	+/-	-3.804(0.00)***	-2.332(0.02)**	-3.36(0.001)***	-4.18(0.00)***	-4.48(0.00)***	3.06(0.002)***
Panel B: **Dummies Independent Variables**							
British Business Culture	+	4.87(0.00)***	14.21(0.000)***	3.53(0.00)***	-2.43(0.016)**	2.50(0.012)**	0.99(0.324)
Sector Type	+	16.38(0.00)***	12.342(0.00)***	12.33(0.00)***	6.28(0.00)***	10.10(0.00)***	10.09(0.00)***
Big 4	+	4.67(0.00)***	1.602(0.11)	4.20(0.00)***	3.25(0.001)***	3.04(0.002)***	1.23(0.22)***
GCC	+/-	-4.65(0.00)***	-1.564(0.118)	-7.21(0.00)***	-3.61(0.00)***	-3.53(0.00)***	5.004(0.00)***
Panel C: **Control Variable**							
GDP		1.29(0.212)	2.23(0.026)	0.29(0.769)	2.17(0.03)	2.09(0.037)	-6.506(0.00)
2010 omitted		.	.	.	.	.	.
2011		0.291(0.772)	0.192(0.848)	0.98(0.33)	-0.829(0.407)	-1.25(0.212)	1.15(0.249)
2012		1.852(0.064)*	1.634(0.103)	2.19(0.03)**	-0.263(0.793)	0.215(0.829)	1.41(0.159)
2013		4.337(0.00)***	2.686(0.007)***	3.72(0.00)***	1.067(0.286)	2.99(0.003)***	2.49(0.013)**
2014		6.98(0.00)***	3.72(0.00)***	5.61(0.00)***	2.313(0.021)**	4.77(0.00)***	4.49(0.00)***

Note: the sub-indices are defined as follows; Sub-EDI-1 is the environmental policy, Sub-EDI-2 is the environmental process-product, sub-EDI-3 is the environmental energy, sub-EDI-4 is the environmental financial, and the sub-EDI-5 is the Environmental other related information sub-index. The Dependent variables are EDI and its sub-indices. Coefficients are in front of parenthesis. ***, ** and * denote p-value is respectively significant at the levels 1%, 5% & 10%. Also, the year 2010 has been excluded from the main model.

Table 7.4: A Summary of All Hypotheses and Results for the OLS Model Based on All Firm Years

Dependent Variable	EDI				
Independent Variables	**Hypothesis Number**	**Hypothesised Sign**	**Actual Sign of Result**	**Statistical Significance of Result**	**Conclusion (Hypothesis)**
Firm size	1	+	+	Significant 1%	Accepted
Profitability	2	+	+	Significant 1%	Accepted
Leverage	3	+	+	Significant 1%	Accepted
Voice & Accountability	4	+	-	Significant 1%	Rejected
Governance Effectiveness	5	+	+	insignificant	Rejected
Control of Corruption	6	+	-	Significant 1%	Rejected
British-B-CUL	7	+	+	Significant 1%	Accepted
Sector Type	8	+	+	Significant 1%	Accepted
Auditor Type	9	+	+	Significant 1%	Accepted
GCC	10	+	-	Significant 1%	Rejected

In addition, the sub-region (GCC) has significant negative associations with all EDI categories ($p \leq 0.01$) except the category of environmental policy which is insignificantly and negatively associated with the GCC, while the environmental other sub-index is positively and significantly correlated to the EDI. With relevance to the coefficients on the research variables in columns 4 to 8 of Table 7.3 based on estimating OLS models of the Sub-EDIs, limited sensitivities could be observed in comparison with those in Column 3 based on estimating OLS based on EDI model. Firstly, the indications of the coefficients on profitability in Columns 5 to 7 have changed from significant to insignificant, however, remain statistically positive. Secondly, the direction of the coefficients of the government effectiveness in Columns 4, 7, and 8 have changed to significant but also remain statistically positive. Thirdly, the statistical significance of the coefficients on business culture in Columns 6 and 8 have turned to negative and insignificant, respectively. Additionally, the coefficients on auditor type (big 4) and sub-region (GCC) in column 4 have changed to statistically insignificant. This point suggests that the mainstream of the results based on the central EDI model has not been sensitive to estimating sub-EDIs models.

Table 7.4 presents the rejection and acceptance of research hypotheses based on the findings of estimating OLS models based on the EDI and its sub-indices that presented in Tables 7.2 and 7.3. Consistent with previous empirical evidence (e.g., Desoky & Mousa, 2009; Despina & Demetrios, 2009; Elsayed & Hoque, 2010; Momany & Pillai, 2013; Oyelere & Kuruppu, 2012), the results indicate a positive and significant association between EDI and firm size. Furthermore, the results are in line with prior empirical literature regarding the positive and significant relationship between firm disclosure and profitability (Agyei-Mensah, 2012; Aly et al., 2010; Fekete et al., 2009). Leverage is another firm-level determinant of corporate disclosure practices. The results state a significant

positive relationship between CED and leverage. This suggests that the findings are in line with previous literature (Barako et al., 2006; Momany & Pillai, 2013; Roberts, 1992; Wallace & Naser, 1996).

Also, the results present a significant positive association between CED and the type of sector which is consistent with the previous corporate disclosure literature (Al-Shammari et al., 2008; Barako et al., 2006; Elsayed & Hoque, 2010).

The results also imply that business culture that inherited from former colonialists and main economy's partners showed signs of having a considerable effect on the environmental reporting in the Arab MENA region. These results are tied to prior evidence (Akrout & Othman, 2013; Othman & Zeghal, 2010; Saudagaran & Biddle, 1992) that reported that companies operating in countries are economically tied to British business culture tended to disclose greater amount of environmental information in their annual reports than those working in countries are linked to French business culture.

Moreover, the results report that type of audit has substantially explained the variability in CED practices in the MENA region. This result, furthermore, was consistent with prior evidence state a positive and significant relationship between CED and auditor type (Haniffa & Cooke, 2002; Wallace & Naser, 1996). Additionally, the results assert that sub-regions or business environment variable (GCC or not) has considerably clarified the variations in CED amongst Arab MENA countries which are in line with Eltkhtash, (2013). The results will be further interpreted from an institutional perspective and discussed based on the institutional environments of the nine MENA countries in chapter eight.

The primary evidence of country-level governance recommends that firms are operating in countries with good country-level governance indicators, such as less corrupted system, will provide better voluntary disclosure practices (Claessens & Laeven, 2003; Engelen & Essen, 2010; Shen & Lin, 2012; Essen et al., 2013), since greater country-level governance becomes vital to the conservation of firm value (Mitton, 2002). This means that companies placed in countries with higher country-level governance indicators provide a larger amount of disclosure practices in general (Essen et al., 2013). However, the results of the current study suggest that the influence of country-level governance on CED is heterogeneous in the MENA region. Particularly, the associations between EDI and Voice and Accountability (V&A), and Control of Corruption (CC) were significant negative; whereas, it was positively and insignificantly related to Government Effectiveness (GE). Empirically, the results of this study are in line with Baldini et al. (2016) who point out that the effect of country-

specific characteristics is heterogeneous in that they might either enhance or reduce the levels of firm disclosure on issues related to social and environmental elements. These results imply that companies with greater country-level governance tend to disclose less environmental information in their annual reports in the MENA region. These findings will be discussed from an institutional perspective in chapter eight.

The forthcoming section of this chapter seeks to provide a sign of the extent to which the gained empirical findings are sensitive or robust to alternative explanations or estimations. In this sense, the sensitivity or robustness of the results to the presence of possible endogeneity problems will be comprehensively explored. Mainly, the findings will be exposed to an extensive set of additional tests, containing estimating; a lagged-effect model, an alternative (weighted) EDI model, a two-stage least square (2SLS) model; and a firm-level fixed-effects model.

7.4 Additional Analyses

As was previously clarified in methodology chapter, the findings presented so far disregard the presence of potential endogeneity problems, as well as inter-dependences amongst potential alternative EDI. Consequently, the next four sub-sections inspect the extent to which the stated findings are sensitive or robust to the presence of possible endogeneity problems and inter-dependences amongst likely alternative EDI. Nevertheless, before reporting the results based on the additional tests, the process of tackling expected endogeneity will be considerably explained below.

7.4.1 Findings pointed at addressing the Presence of Possible Endogeneity Problems

Consistent with previous literature, the potential existence of endogeneity problems is explicitly addressed. Notably, the five-step process suggested by Larcker and Rusticus (2010) for positive accounting studies is utilised. In brief, Larcker and Rusticus (2010) recommend that the first step in resolving any endogeneity concerns is to apply rigorous accounting logic and theory to state the endogenous and exogenous variables within the models. A variable is regarded to be endogenous if its value is identified within the model, although a variable is considered to be exogenous if it is associated with the main dependent variable, it is identified outside the context of the model (Ntim, 2009). The problem of endogeneity, thus, occurs when a variable originally expected to be exogenous is technically endogenous within a model (Elmagrhi, 2016). In literature review and methodology chapters of this study, the theoretical associations between the dependent (EDI) and independent variables (firm size, profitability, leverage, institutional governance, indicators, business culture, industry type, audit type and sub-regions) have been comprehensively explained from an institutional perspective. Furthermore, Larcker and Rusticus (2010) show that the researcher should explicitly

figure out some reasons to explain why endogeneity might be a problematic issue. In the current study, the endogeneity may theoretically be a concern as a result of the expected omitted variables, the errors of measurements, and reverse causation.

Also, the phenomena of environmental disclosure is a very sophisticated. As such, this study has depended on a robust institutional framework, which debatably also could raise the opportunity that endogeneity might be presented with the stated models.

From the perspective of Larcker and Rusticus (2010), the third step includes discovering the number of alternatives for addressing the problems of endogeneity. The potential presence of endogeneity is, of course, dealt with in four key ways. As will be explained below, these techniques include estimating: (1) a lagged EDI model; (2) a weighted EDI model; (3) a firm-level fixed-effects model (4) a two-stage Least Squares (2SLS) model (Beiner, Drobetz, & Schmid, 2006; Larcker & Rusticus, 2008; Ntim, 2009).

The fourth proposed step is to illustrate that any instrument utilised as a proxy for an original variable is a valid and relevant instrument. The final step recommended by Larcker and Rusticus (2010) is to compare the signs, magnitude and statistical significance of the OLS and endogeneity adjusted estimations to determine the extent to which they are sensitive or robust to the existence of endogeneity issues.

In the four sub-sections below, findings based on four analysis of endogeneity will be discussed and compared with OLS results that have previously been stated in this chapter. Section 7.3.2 will report findings acquired by estimating a lagged EDI effect model. Section 7.3.3 argues results based on weighted index forecasts. Section 7.3.4 documents the results based on a 2SLS model, while section 7.3.4 illustrates findings based on estimating a fixed-effects model.

7.4.2. Findings built on estimating a Lagged EDI Model

Table 7.5 presents a number of robustness tests have been conducted for this study. Columns 3 and 4 of Table 7.5 exhibit the findings obtained by estimating an OLS model and a lagged effect for the EDI model as stated in equation 12 in Methodology chapter and mentioned below:

$$EDI_{it} = \alpha_0 + \beta_1\ SIZE_{it-1} +\ \beta_2\ LEV_{it-1} +\ \beta_3\ PROF_{it-1} +\ \beta_4\ V\&A_{it-1} + \beta_5\ GE_{it-1} +\ \ \beta_6\ CC_{it-1}$$
$$+\ \beta_7\ SEC_{it-1} + \beta_8\ BC_{it-1} + \beta_9\ BIg4_{it-1} + \beta_{10}\ GCC_{it-1} + \sum_{i=1}^{n} CONTROLS_{it-1}$$
$$+\ \varepsilon_{it}$$

Where EDI refers to the Environmental Disclosure Index that has been adopted and developed based on the relevant literature. SIZE, LEV, PROF, V&A, GE, CC, SEC, BC, BIG 4 and GCC are defined as firm size, leverage, profitability, voice and accountability, government effectiveness, control of corruption, sector type, business culture, type of audit and sub-region or business environment. CONTROLS refer to the two control variables, namely Gross Domestic Product (GDP) and, and year dummies.

Also lagging the variables reduced the total observations from 900 to 720. According to the procedure proposed by Larker and Rusticus (2010), a comparison between findings based on estimating an un-lagged EDI model and a lagged EDI will be facilitated (see Columns 3 and 4 of Table 7.5). Consistent with findings based on estimating the lagged-effects model, Columns 3 presents that the Adjusted R^2 is roughly 60%, which implies that the variables of this research could interpret at least 60% of differences in the sampled firms' EDI. This point is close to the findings documented in Columns 3 in Table 7.5 based on estimating the un-lagged model, however, statistically 1.6% lower in the case of un-lagged EDI model.

Concerning the coefficients on the research variables in column 4 of Table 7.5 based on estimating the model of lagged effect, three critical sensitivities may be observed when compared with those in Column 3 of Table 7.5 based on estimating a un-lagged-effects model (OLS model). Firstly, the indication of the coefficient on profitability in Column 4 has changed from significant to insignificant, nevertheless remains statistically positive. Secondly, the sign on the coefficient of the voice and accountability in Column 4 has changed to insignificant, however also remains statistically negative. Particularly, the coefficients on profitability and voice & accountability, which were statistically significant at the 1% level in the un-lagged model, are not statistically significant in the lagged structure. The directions of the coefficients on the remaining research variables (SIZE, LEV, GE, CC, SEC, BUS-CUL and BIG 4) are remained unchanged whether an un-lagged or lagged EDI model is estimated. These results recommend that the mainstream of the findings based on the un-lagged model are not sensitive to a lagged EDI model.

Concerning the control variables, the only one case of sensitivity to the estimated lagged-effects model is related to the statistically insignificant sign of the coefficient on GDP in Column 3 which is no longer relevant in Column 4 of Table 7.5, nevertheless, remains statistically positive. In particular, the statistical significance of coefficients on GDP has changed from statistically insignificant in column 3 in Table 7.5 to significant at 10% in column 4 of the same Table. This sensitivity might imply the existence of a lagged structure associations between GDP and the EDI.

Table7.5: The Results of Robustness Test in Comparison with the Main OLS Results.

	Exp. Sign	OLS	Lagged-effects	Weighted index	Fixed-effects	2SLS
Adjusted R^2		.584	0.611	0.625	0.49	0.571
Durbin- Watson		.388	1.153	0.461	1.909	0.39
No. of observations		900	900	900	900	900
Constant		-4.46 (0.00)***	-3.73(0.00)***	-3.68(0.00)***	-1.07(0.285)	-1.93(0.054)*
Panel A: Continuous Independent Variables						
Firm size	+	22.858(0.00)***	21.09(0.00)***	22.97(0.00)***	1.07(0.285)	4.75(0.00)***
Profitability	+/-	1.935(0.053)***	0.59(0.554)	2.28(0.023)**	0.80(0.424)	9.57(0.00)***
Leverage	+/-	6.389(0.00)***	5.528(0.00)***	5.90(0.00)***	0.92(0.36)	6.37(0.00)***
Voice and Accountability	+/-	-2.89(0.004)***	-1.60(0.11)	-2.17(0.031)**	-4.51(0.00)***	-4.98(0.00)***
Governance Effectiveness	+/-	1.590(0.12)	1.08(0.113)	1.62(0.20)	0.82(0.413)	0.09(0.925)
Control of Corruption	+/-	-3.804(0.00)***	-3.51(0.00)***	-4.19(0.00)***	-1.234(0.218)	-1.025(0.306)
Panel B: Dummy Independent Variables						
British Business Culture	+	4.87(0.00)***	4.74(0.00)***	7.36(0.00)***	3.29(0.001)***	0.601(0.054)*
Sector Type	+	16.38(0.00)***	15.04(0.00)***	17.42(0.00)***	4.382(0.00)***	4.82(0.00)***
Big 4	+	4.67(0.00)***	4.32(0.00)***	4.41(0.00)***	3.69(0.00)***	21.14(0.00)***
GCC	+/-	-4.65(0.00)***	-3.19(0.002)***	-3.72(0.00)***	-7.93(0.00)***	0.67(0.505)
Panel C: Control Variable						
GDP		1.29(0.212)	1.41(0.16)*	1.25(0.211)	2.90(0.004)	3.63(0.00)
2010 omitted		.	.	.	.	.
2011		0.291(0.772)	0.01(0.992)	-0.14(0.885)	3.65(0.00)***	-0.17(0.865)
2012		1.852(0.064)*	2.82(0.005)***	1.643(0.101)	6.69(0.00)***	0.961(0.337)
2013		4.337(0.00)***	4.842(0.00)***	4.395(0.00)***	12.92(0.00)***	3.37(0.001)***
2014		6.98(0.00)***	.	7.03(0.00)***	18.83(0.00)***	5.392(0.00)***

Note: the robustness tests used for study purposes are an Alternative disclosure index (weighted index) model, a lagged effect model, a Fixed effect model and a 2 SLS model. The Dependent variable is the EDI. Coefficients are in front of parenthesis. ***, ** and * denote p-value is respectively significant at the levels 1%, 5% & 10%. Also, the year 2010 has been excluded from the main OLS model, Alternative index model, Lagged effect model, Fixed effect model and 2SLS model. In addition, 2014 has been omitted from lagged effect model.

To sum up, this sub-section has sought to determine the extent to which the findings of estimating OLS model based an un-lagged EDI are sensitive or robust to estimating a lagged EDI. In general, and in line with the results of the multivariate regression model, the sign about the robustness or sensitivity of the findings to an un-lagged or a lagged EDI structure is diversified. Although the statistical significance and the direction of the coefficients on a mainstream of the research variables have not been changed whether an un-lagged or a lagged structure was estimated, a small number of variables (i.e., profitability and GDP) has presented some sensitivity levels.

As discussed above, these sensitivities could advise that there is certainly an EDI time-lag for the sensitive, independent variables such as profitability. It might also be clarified by the variances in observations' number between the un-lagged and lagged structures. Overall, these results recommend more support to the main OLS results that discussed in sub-section 7.2, where firm-specific characteristics are significantly related to the EDI, the influence of CLG on EDI is heterogeneous, and region-specific pressures have significant relations with CED in the region.

The next sub-section of this chapter will also provide an examination of the extent to which the findings based on estimating a weighted EDI model are sensitive or robust.

7.4.3 Findings based on estimating an Alternative (weighted) EDI Model

As mentioned in subsection 7.2, the EDI adopted, developed and applied in the current study to measure corporate environmental disclosure amongst listed companies operating in MENA countries consists of 55 items. These items have been divided into five sub-indices, which are not equally weighted, as the number of elements differs across the five sub-indices (categories), leading to different weights being allocated to each category. The EDI was categorised and weighted as follows. Environmental policy five items (9%); environmental pollution 22 items (40%); environmental energy ten items (18%); environmental financial seven items (13%) and environmental others eleven items (20%). Hence, to check the robustness or the sensitivity of the central findings to the weighting of the five sub-indices of the EDI, this study follows the procedure of earlier studies in constructing a weighted index (Elghuweel, 2015; Ntim, 2009). An alternative Environmental Disclosure Index (EDI), called WEDI, has been constructed, where equal weights of 20% were awarded to each sub-index as stated in equation 10 in methodology chapter. The unweighted EDI (the main model) was replaced by the WEDI as a

dependent variable in estimating OLS regression as a robustness test, and the main findings are reported in column 5 of Table 7.5.

$$WEDI_{it} = \alpha_0 + \beta_1\ SIZE_{it} +\ \ \beta_2\ LEV_{it} +\ \ \beta_3\ PROF_{it}\ +\ \beta_4\ V\&A_{it}\ +\beta_5\ GE_{it} +\ \ \beta_6\ CC_{it} +\ \beta_7\ SEC_{it}$$
$$+\ \beta_8\ BC_{it} +\ \beta_9\ BIg4_{it} + \beta_{10}\ GCC_{it} + \sum_{i=1}^{n} CONTROLS_{it} +\ \varepsilon_{it}$$

Column 5 of Table 7.5 report the finding of the weighted EDI index along with the key findings reported in Columns 3 of Table 7.5. The statistical results of both analyses are considerably similar. The adjusted R^2 shows that approximately 62.5% of the variability in the WEDI is conjointly clarified by estimating this model. The WEDI model suggests that the independent variables are significantly and positively associated with the WEDI at slightly different levels of significance in comparison with the leading EDI model. These findings are discussed below, with particular concentration on the key sensitivity problems of the analysis.

The direction and significance of the coefficients on firm-specific characteristics variables (firm size, leverage and profitability) have not considerably changed in the weighted disclosure index (WEDI), except on profitability which slightly changed to be positively significant a 5% level instead of 1% level of significance in the main EDI model. With respect to country governance variables (voice and accountability, government effectiveness and control of corruption), they have not changed in terms of sign and significance from the unweighted EDI model, except the coefficient on voice and accountability that remains negative but at 5% level of significance in the WEDI instead of 1% the central EDI. Furthermore, all dummy variables (business culture, type of industry, type of audit and sub-region) have no changes regarding both significance and direction of the unweighted EDI model.

In general, these findings suggest more robustness of the previous inferences from unweighted (EDI) model that there are significant or strongly statistical relationships between firm-specific characteristics and region-specific pressures in one hand and the EDI on the other hand, although the influence of CLG on the EDI is heterogeneous. These results suggest that weighting the sub-indices included in the main EDI has no considerable effects on the association between the independent variables and the CED in MENA countries.

The next sub-section of this chapter will also offer a test of the extent to which the results based on estimating a firm-level fixed-effects model are sensitive or robust.

7.4.4 Findings based on estimating a Firm-level Fixed-Effect Model

As recommended by the Hausman test, a firm-level fixed-effects model has been estimated to check whether the original findings could be affected by unobserved firm-specific characteristics. The results of firm-level fixed-effects are presented in Columns 6 of Table 7.5, further to the results of the main OLS that were reported in Columns 3 of Table 7.5. The adjusted R^2 (49%) is less than that presented by the OLS model which means that at least 49% of the variability in the EDI could be explained by the independent variables that selected for this study. Overall, firm-level determinants, country-level governance indicators, and region-level pressures are predicted by the firm-level fixed-effects model to be statistically significant factors influencing the EDI. The main sensitivities between the OLS model and the firm-level fixed-effects model are explained below.

Limited witnessed sensitivities are related to estimating the firm-level fixed-effects model. The firm-specific characteristics (firm size, profitability and leverage) are still positively associated with the EDI compare to the main model but have changed to an insignificant level in the three variables. With respect to country-level governance, only the control of corruption variable has become statistically insignificant in the firm-level fixed-effects model compare to the main model. The direction of CLG variables has not been changed in the fixed-effects model. The dummies have remained statistically positive and significant at 1% level of significance in both the firm-level fixed-effects and the main OLS models.

The results of estimating firm-level fixed-effects model suggest that the original findings of OLS model have not been considerably affected by unobserved firm-specific characteristics. Altogether, these results recommended more robustness of the former OLS model inferences that indicated positive links between firm-specific determinants and the EDI, mixt effects of CLG on the EDI, and significant relations between region-specific pressures and the EDI.

The next sub-section of this chapter will also suggest an examination of the extent to which the findings based on estimating a 2SLS model are robust or sensitive.

7.4.5 Findings based on estimating a Two-Stage Least Squares (2SLS) Model

As has been explained in sub-section 4.6.2.2 simultaneity and omitted variables could also introduce problems of endogeneity to the structural equation. To determine the extent to which the primary results are meaningfully affected by the existence of endogeneity problems, the methodology of 2SLS is applied.

Following suggestions of the literature (Beiner et al., 2006), the Durbin-Wu-Hausman test was carried out to test for the existence of endogeneity, which consists of two stages (the findings were not reported here for brevity purposes). Stage one, the profitability (PROF), for instance, assumed to be endogenous in equation (1), is regressed on the control variables, as its residual value is saved as R-PROF, and as specified in equations (12) below.

$$PROF_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i \, CONTROL_{it} + \varepsilon_{it}$$

Where the PROF remains the same as identified in equation (1); however, the CONTROL variables have been extended to include BC, SEC, Big 4, and GCC, further to GDP, and YD.

In the second stage of Durbin-Wu-Hausman test, the EDI is regressed on the actual value of PROF, the residual value R-PROF and control variables in equation (13) as follows:

$$EDI_{it} = \alpha_0 + \beta_1 PROF_{it} + \beta_2 R - PROF_{it} + \sum_{i=1}^{n} \beta_i \, CONTROL_{it} + \varepsilon_{it}$$

The test suggests a statistically significant coefficient on the saved residual value R-PROF, rejecting the null hypothesis of no presence of endogeneity problems (Larcker & Rusticus, 2010). This means that the profitability is an endogenous variable, and a 2SLS model is an appropriate methodology for estimation to check the extent to which the key findings are influenced by endogeneities (Ntim, 2009). This test has been carried out upon all the independent variables and concluded that size, leverage, profitability, V&A, GE, CC are endogenous variables and sector, BC, big 4, GCC, GDP are exogenous variables.

In the first stage of 2SLS, each endogenous variable will be regressed on all exogenous variables. Secondly, the simultaneous equations will be separately estimated with the right endogenous variable substituted by its appropriate predicted value emerged from the regression in the first stage. Nevertheless, before replacing the actual values of the key experimental variables with their predicted values, it is considered to check whether these predicted values are suitable to replace their real values in the second stage. This check has been conducted by using Pearson and Spearman correlation matrices. The results suggest that the predicted values of the endogenous variables were extremely correlated to their actual values (the results were not reported here for brevity reasons). In addition, the predicted values of the endogenous variables showed signs of having low correlations with their residuals. This means that the predicted values of endogenous variables are statistically appropriate instruments to be replacing their actual values in the procedure of estimating a 2SLS model (Durnev & Kim, 2005; Reguera-Alvarado et al., 2016).

Column 7 of Table 7.5 covers the findings emerged from estimating a 2SLS equation based on the EDI as explained in sub-section 4.6.2.2 of Chapter Four (methodology chapter). As may be perceived, each one of the endogenous variables performs as either the independent or dependent variable in one of the equations (3) to 9 alongside with their appropriate exogenous variables (see sub-section 4.7.2.2). Compared to the inclusion of the EDI, the justification is to permit for potential inter-relations or inter-dependences (i.e., substitutions or complementarities) to exist amongst the experimental variables.

Column 7 of Table 7.5 reports that the adjusted R^2 is approximately 57% which is a very close to the adjusted R^2 of the basic OLS model (58%). This means that at least 57% of the disparities in EDI amongst the sampled firms can be explained conjointly by the unstandardized variables emerged from the first stage of 2SLS regression. This adjusted R^2 is tied with the adjusted R^2 presented by previous studies (Elghuweel, 2015; Miihkinen, 2013a, 2013b). For instance, Miihkinen (2013) has reported 58% adjusted R^2 of a 2SLS model. Similarly, Elghuweel (2015) documented a 71% adjusted R^2 of a 2SLS model. The findings of estimating a 2SLS model are considerably consistent with those stated by estimating OLS model. The particular sensitivities between the main OLS findings and the results of 2SLS are explained further below.

Column 7 of Table 7.5 presents that the levels of sign and significance of the coefficients on the continuous independent variables were fundamentally similar to those reported by estimating OLS regression, except the coefficient on the control of corruption (CC) which has changed from 1% level of significance to insignificant level (0.306). However, the control of corruption has remained a negatively associated with EDI as same as the sign of OLS model that reported in column 3 of Table 7.5. The levels of significance and direction of the dummy independent variables (business culture, sector, auditor type, business environment/ sub-region) demonstrate restricted cases of sensitivities. First, the significance of the coefficients on business culture which was a positive sign at 1% level reported in column 3 of Table 7.5 is still a positive and significant, but at 10% level of significance in column 7 of Table 7.5. Second, business environment (GCC) variable, which was a negative and significant at the 1% level in the OLS model, has become positive insignificant in 2SLS model.

Overall, these findings indicate more support to the previous inferences from estimating an OLS model. These results propose that the main findings have not been expressively influenced by the presence of endogeneity problem. The next sub-section summarises this chapter.

7.5 Conclusion

This chapter has achieved three essential objectives. First, the validity and reliability of the used methods have been approved. The coefficients of correlation were used to evaluate whether the scores of EDI were valid or not. Particularly, the correlation matrices suggest that the EDI and its sub-indices are highly correlated, indicating how well the grouping scheme or classification has interpreted the total EDI score. Furthermore, it is estimated that a firm's environmental disclosure strategies are comparable as to the different EDI sub-indices (Botosan, 1997; Cheng & Courtenay, 2006). The findings also exhibit that the sub-indices are statistically correlated to each other. These results of correlation analysis confirm that EDI and its sub-indices have a significant validity degree in that they consistently capture the CED in firms' annual reports. Also, the significant correlation between EDI sub-indices and the explanatory variables (firm size and industry type) implied a valid EDI (see Ahmed & Courtis, 1999; Botosan, 1997). Cronbach's α is considered to be as one of the most extensively used indices to assess the reliability of data (Bland & Altman, 1997). In the current study, α value is 0.79 which indicates a satisfactory level of reliability of the used EDI. Moreover, the reliability and validity of the results of this study were improved by the fact that the researcher draws deeply on sub-indices or categories already have been clearly defined in the CED literature.

Second, the empirical results of this study were highlighted. The findings examined whether better environmental disclosure is associated with multilevel variables employed from an institutional perspective. In this sense, the results of estimating OLS regressions suggest that the coefficients on firm-specific characteristics (firm size, profitability, leverage, industry, and auditor type) are statistically positive and significant which means that firm-level determinants are positively and significantly associated with CED in the MENA region. These results are in line with previous environmental disclosure literature. Also, the impact of country-level governance indicator (voice & accountability, government effectiveness and control of corruption) is heterogeneous in that they might increase or decrease CED practices in the area. Whereas the coefficient of government efficiency was insignificant positive, the coefficients on voice & accountability and control of corruption were negative significant. Crucially, investigating the variability in CED practices by using country-level governance could be considered as an essential empirical contribution of the present study addresses an existing fundamental gap in the CED literature in both developed and developing countries.

The results also report mixed results have been offered by investigating the relationship between region-specific pressures (business culture and business environment) and the EDI in the region. Although a significant negative association was reported between the sub-region and the EDI, a significant positive link was documented with business culture. Interestingly, business culture seems to have a significant influence on CED in the region. This result means that the accounting profession and, in particular, the disclosure practices are heterogeneously influenced by both British and French business cultures in the region.

Finally, this chapter presented the results on the basis of a series of sensitivity tests, including conducting a lagged EDI model, an alternative index model, a firm-level fixed-effects model and finally a Two-Stage Least Squares (2SLS) model. Overall, the findings of these robustness tests indicated more support to the previous inferences from estimating the basic OLS model. This means that the main findings were not expressively influenced by the presence of endogeneity problem.

In the next chapter, the eighth chapter, the main findings will be broadly discussed in comparison to the previous theoretical and empirical literature from an institutional perspective. In particular, the isomorphism pressures (i.e., mimetic, coercive, and normative) and the institutional environments of the selected MENA countries will be employed to interpret and discuss the empirical results of the current study.

Chapter Eight: Discussion

8.1 Introduction

Chapter eight discusses the findings of the current study. It aims to accomplish two key objectives. Firstly, it explores and discusses the different levels, trends and patterns of CED practices in the Arab MENA companies at both country and regional scales. Secondly, it shows comprehensive explanations of multilevel determinants of CED in the region from an institutional perspective. This chapter is structured as follows. Section 8.1 introduces the chapter. Section 8.2 documents and explains the explored levels, trends and patterns of CED practices in the area. Section 8.3 seeks to explain the association between experimental variables employed from an institutional perspective and the level of CED practices (EDI) in the Arab MENA region. Section 8.4 summarises this chapter.

8.2 The discussion of Levels, Trends, and Patterns of CED in the Arab MENA Region

The analysis of 900 annual reports in comprehensive detail has generated several insights into CED across the Arab MENA region, yet a large amount of data presents further opportunities for analysis. For example, going beyond the analysis by industry sector and relative size presented in Table 5.8 (p120), a more sophisticated statistical analysis of the factors associated with differences between companies could be undertaken, akin to many previous studies that have sought, with varying measures of success,[17] to explain patterns in disclosure. However, as a multi-country study that covers nine countries, and given the findings that have emerged about change over the period under study, it seems appropriate to focus the remainder of the thesis on the international patterns and trends that have been discovered. Indeed, much of the more detailed analysis in chapter five was oriented towards understanding what might, or might not, be underlying the region-wide trend identified.

A striking aspect of the findings presented is that most of the countries are quite similar in terms of their CED, even as the level of disclosure has increased. However, it is notable that most countries lag behind Egypt and, more recently, Saudi Arabia, both of which would be regarded as 'leading' countries in the region. Egypt has the longest-established stock exchange in the MENA region and a relatively well-developed regulatory environment (Abdelsalam et

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[17] The R^2 of the multiple regressions contained in the explanatory studies listed in Table 3.4, for example, range from 1.9% to 77%, with most lying in the range 20%-40% (e.g. 20% in Ismail and Ibrahim (2009), 29% in Al-Ajmi et al. (2015), 37% in Habbash (2016), and 38% in Naser & Hassan (2013)).

al., 2007). For Example, Egyptian listed firms should be compliant with IAS 10 which requires companies to disclose any estimated environmental liability or loss if it is likely that the subsequent actions could lead to experiencing a liability or losing an asset at the financial statements date (Hanafi, 2006). Although it is not resource-rich, it is a major economy and a major centre of population and culture in the region. As the region's largest economy, not to mention being home to two of the holiest sites in Islam (Mecca and Medina), Saudi Arabia also has considerable influence. The Islamic law "Shari'a" in Saudi Arabia, for example, is considered as the Basic Law of Governance which supports the sense of responsibility towards others, and organisations according to Sharia law should act in an environmentally-responsible manner with the society (Alhazmi, 2017). During the period under study, it has increased its environmental regulation, which is a possible explanation for the increased disclosure that has been witnessed. Given the standing and influence of Egypt and Saudi Arabia within the Arab MENA region, it is not surprising if their corporate and other practices tend to spread to the other countries. Indeed, various emerging countries are following Saudi Arabia's environmental regulatory procedures (Khurshid et al., 2014).

At the other end of the ranking apparent in Table 5.1 (p114), Tunisia disclosed significantly less than the other eight countries. A country's business culture can have a significant influence upon firms' CED in the MENA region (Othman & Zeghal, 2010), and one possible reason for relatively low disclosure by Tunisian companies could be the presence of a French business and accounting culture, in which there is less influenced by the accounting profession – in contrast to the case of Egypt, for example. However, it should be noted that the Tunisian firms in the sample are smaller than the equivalent companies in other countries. Moreover, it should be acknowledged that Morocco's business culture has similar French heritage, but its level of CED is in line with the majority of the other countries. If a different business culture does have an influence, then, it must presumably have been overcome by some other factor or factors. One possibility in the case of Morocco is its strong economic ties with GCC (Cooperation Council for the Arab States of the Gulf, usually abbreviated to Gulf Cooperation Council) countries, with GCC investments increasingly being made in Morocco (Hussein, 2012). Morocco has also introduced legislation, such as that which was adopted in 2011, to give impetus to environmental and sustainable development (United Nations, 2012). It has been argued that the existence of comprehensive social and environmental protection laws might lead to new environmental accounting regulations related to CED practices (UNCTAD, 1996).

These environmental regulations and initiatives could, thus, be attributed to the recorded level of CED practices in those countries.

It should be noted, though, that even Tunisia has witnessed, along with the other countries, increasing CED over the period 2010-2014. The cultural similarities and economic connections across the region mean that innovations are likely to spread in a relatively quick and consistent manner, mainly if they take place in 'leading' countries such as Egypt and Saudi Arabia. Moreover, there may be region-wide trends at work. One could be the desire for FDI (foreign direct investment) (Hussainey et al., 2011), which tends to encourage convergence of accounting practices with the source countries (Nobes & Parker, 2016). Another might be changing attitudes, with a growing awareness of climate change and regional environmental challenges, not only among politicians and the public but also on the part of firms' decision makers (Islam, 2011), perhaps as a result of collective stakeholder pressures (Gana & Dakhlaoui, 2011). Recent legislation, such as that mentioned above, might be both reflective and encouraging of this. Also, the so-called Arab Spring might be associated with a general shift in approaches to accountability and disclosure (Masetti et al., 2013), as firms have been subject to greater pressure to legitimize their activities in a given community (Avina, 2013).

Other changes in the reporting environment happened in the MENA region could also be attributed to this region-wide trend of CED. Particularly, the stock markets in the nine MENA countries are asking the listed firms to prepare their annual reports in accordance with IFRS (see Table 2.5, p24). This means that any improvement in CED could be associated with the implementation of IFRS7[18] by companies to be compliant with their stock market requirements (Al-Shammari et al., 2008). Moreover, the regulatory frameworks in the region voluntarily require companies to disclose their environmental-related information in the annual reports as a part of their corporate governance approaches (Khasharmeh & Suwaidan, 2010). For example, in 2003, the Board of the Capital Market Authority (BCMA) in Saudi Arabia has issued regulation support the implementation of corporate governance practices including the enhancement of the transparency and disclosure quality of Saudi listed companies (Adawi & Rwegasira, 2012). Similarly, in the UAE, the Securities and Commodities Authority (SCA) has introduced a new corporate governance code, which applies to all listed companies by the 30th of April 2010. This code includes, for example, in its article 43 that the board of directors

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[18] IFRS 7: if a company is significantly affected by the risk associated with its use of emissions trading would require additional disclosure.

should undertake a company's policy towards the local community and environment and any further actions would require additional disclosure (Adawi & Rwegasira, 2012). Therefore, this increasing trend of CED seems to be attributable to the requirements of stock exchanges and corporate governance reforms in the region.

However, it should be acknowledged that, although the increase in CED identified across the region is significant, it cannot be considered revolutionary, and disclosure levels still lag behind those in developed countries. Nevertheless, it will be interesting to monitor future developments, especially if more widespread concern about environmental sustainability takes root in the years to come.

The variations in CED noted in the results might be associated with the variances in time at which MENA countries adopted IFRS which are mainly enforced by the stock markets (see Chapter Two, section 2.2). Notably, the early implementation of IFRS seems to yield a greater learning benefit related to financial instruments and segment reporting than their late-embracing counterparts (Abdallah et al., 2015). For example, Kuwait, Saudi Arabia and Egypt have approved IFRS in 1991, 1992 and 1992, respectively, although Oman and the UAE adopted IFRS in 1996, and 1999, respectively (Abd-Elsalam & Weetman, 2003). Given the difference in the length of time that these countries have had to become familiar with IFRS, it can be suggested that variations in the quality and quantity of corporate disclosure across the sampled countries are present (Al-Shammari et al., 2008). In this sense, CED provided by Egypt, Saudi Arabia and Kuwait could be indicative of their early implementation of IFRS in the region. In contrast, the countries that have delayed the adoption of IFRS in the region (e.g., Oman in 1996 and UAE in 1999) have relatively provided lower levels of CED than those that have adopted IFRS earlier. In Tunisia, the accounting standards have not been updated to reflect substantial and multiple changes introduced by IFRS (Boumediene, Zarrouk & Tanazefti, 2016). This could be linked to the level of CED recorded by the Tunisian firms which represent the lowest score in the region. Collectively, MENA companies seem to be affected by the regulatory constraints resulting in increasing CED levels, although managers have the choice to make decisions concerning the quality and quantity of voluntary corporate disclosure (Dobler, Lajili, & Zéghal, 2011), which allows for variability beyond the lowest level of the requirements of IFRS (Abdallah et al., 2015).

The next section of this chapter discusses the central findings that obtained from conducting the empirical investigation on the association between CED practices in the MENA region and

three different groups of variables which are firm-level determinants, country-level determinants, and regional-level determinants.

8.3 The discussion of Explaining the Variability in CED in the Arab MENA Region Using Multi-Level Variables Employed from an Institutional Perspective

Consistent with previous studies that applied balanced panel data (Elghuweel, 2015; Ntim, 2009; Ntim & Soobaroyen, 2013; Elmagrhi et al., 2016); the empirical examination was conducted in this study by using Ordinary Least Squares (OLS) technique. The variables of concentration in this model were divided into three principal groups. First, the dependent variable is the Environmental Disclosure Index (EDI). The second group consists of three levels of independent variables which are firm-specific characteristics (firm size, profitability, leverage, auditor type, and sector type), country-level governance indicators (voice and accountability, government effectiveness and control of corruption), and finally region-specific pressures (business culture and sub-region). The third group is including two control variables (Gross Domestic Product and year dummies) have been employed for this study.

Firm-level characteristics are significantly and positively linked to CED practices in the region. Concerning firm size, the result is in line with earlier disclosure evidence (Desoky & Mousa, 2009; Elsayed & Hoque, 2010; Momany & Al-Shorman, 2006; Oyelere & Kuruppu, 2012). These studies indicated a positive and significant relationship between firm disclosure practices and firm size, and subsequently, this study suggests that firm size has a significant positive association with EDI. Conceivably, large sized companies could have considerable influence on a given community (Haniffa & Hudaib, 2006); thus, they may face greater pressure to provide environmental information in order to legitimise their activities (Cowen et al., 1987). Accordingly, firm size is attributed to the variability in CED practices, where large-sized companies are often scrutinised by both the socially sensitive special interest groups and the public (Roberts, 1992). Larger firms also could have more shareholders concerned with CED practices, and are more likely to focus on formal communication mediums to deliver the fundamental environmental information to the interested parties (Cowen et al., 1987). It is expected that large firms have environmental disclosure practices in their annual reports more than small businesses. Theoretically, disclosure practices of the large-sized companies can be explained by coercive isomorphism as these firms are under pressure to report their environmental information to avoid speculating upon their shares (Al-Arussi et al., 2009). Additionally, large corporations have a similar institutional logic which forms their

accountancy practices and the system in which they maintain their organisational legitimacy (Guerreiro et al., 2012). Therefore, the large firms have a considerable impact on and face greater pressure from, MENA governments, and their CED could be indicative of coercive pressures. CED of small companies, nevertheless, ideally explained by mimetic forces, as they adopt CED practices of large corporations to secure their legitimacy and resources in a given context (Guerreio et al., 2012). Arguably, large companies seem to adopt similar strategies and structures and rely on a common resources environment (Hannan & Freeman, 1977). As such, similarly sized companies in the MENA region have potentially influenced by the same structural constraints and institutional pressures, and hence published comparable levels of CED in their annual reports.

Concerning profitability, the results are also consistent with prior empirical literature that documented a significant and positive association between CED and profitability (Agyei-Mensah, 2012; Aly et al., 2010; Fekete et al., 2009). Significantly, the profitable companies are mostly deemed to be large-sized and tended to offer better disclosure practices in order to enhance their revenues and maintain their reputation in a given society (Singhvi & Desai, 1971). This means that companies are following a profitable company's CED practices to enhance their survival prospects in the future, representative of mimetic pressure (Haveman, 1993).

Leverage is another issue could influence firms' disclosure practices which encouraged improving CED practices in order to reduce the risks of legitimacy within a community (Roberts, 1991). The results of the study, in this sense, are in line with previous literature that stated that firm leverage has a positive and significant relationship with environmental reporting (e.g., Pavelin, 2008; Roberts, 1991; Roberts, 1992). From a theoretical point of view, the highly leveraged firms tend to offer greater CED in the MENA region (Elsayed & Hoque, 2010; Momany & Al-Shorman, 2006; Naser et al., 2006), as the request for environmental information by the authoritarian stakeholders could result in putting pressure on those firms to disclose environmental information in their annual reports which lead to a coercive isomorphism (Botti, Boubaker, & Hamrouni, 2014). Mainly, highly leveraged companies see their stakeholders having a substantial influence on their environmental policies due to their control over resources. For that reason, managers are in favour of publishing their companies' environmental information to accommodate stakeholders. As such, leverage is related to the variability in CED in MENA countries; notably, a higher reliance on debt means a greater degree of force that encourages corporations to report the information that reveals their

commitment and responsibility towards the close environment (Huang & Kung, 2010). From a stakeholder's perspective, when an organisation has a negative influence on the surrounding environment, it faces a danger of penalties which could also discourage their interests. Accordingly, stakeholders are extremely concerned about companies' harmful activities, and therefore, they persuade these companies to uphold their environmental responsibilities and disclosures (Huang & Kung, 2010).

The type of audit has played a significant role in the globalisation of accounting practices, and the normative pressure seems to offer a better interpretation of audit type-CED association. In this sense, the famous auditing companies (Big 4) have the expertise and seek to preserve their previous reputations in order to avoid costly litigation by promoting the environmental disclosure in companies' annual reports (Alanezi, 2009; Haniffa & Cooke, 2002; Wallace & Naser, 1996). The type of audit, therefore, has a substantial impact on firm's environmental disclosure practices across the Arab MENA countries bringing a kind of normative isomorphism to a certain organisational field (Al-Mulhem, 1997).

The results present a significant positive association between firm environmental disclosure and the type of sector. This result is consistent with previous disclosure literature (Barako et al., 2006; Ghazali, 2007; Thompson & Zakaria, 2004). The results of this study recommend that industrial firms, which are considered as environmentally sensitive, have disclosed the environmental information in their annual reports more than the other companies operating in services sectors. Notably, the sector type could be attributable to the variations in corporate disclosures by the firm that leads the industry (Marston, 2003; Oyelere et al., 2003). Thus, companies in the same sector in the nine MENA countries are following CED practices of the leading firms to be legitimate and acceptable in that sector, indicative of a society of practices which seems to be linked to a mimetic isomorphism (Amran & Haniffa, 2011).

Concerning country-level determinants of CED practices, the effect of country-level governance on CED has been investigated. The primary evidence on country-level governance (e.g., Claessens & Laeven, 2003; Engelen & Essen, 2010; Shen & Lin, 2012; Essen et al., 2013) recommends that firms operating in countries with good national-level governance will provide better disclosure practices (Mitton, 2002). This implies that companies located in countries with stronger state governance could provide a larger amount of voluntary disclosure practices in general (Essen et al., 2013).

However, country-level determinants are differently related to CED practices in the MENA region. Strikingly, the associations between EDI and each of Voice and Accountability (V&A), and Control of Corruption (CC) were significantly negative; whereas, it was positively insignificant with Government effectiveness (GE). Empirically, these results are in line with Baldini et al. (2016) who point out that the effects of country-specific characteristics are heterogeneous in that they might either enhance or reduce the levels of firm disclosure on issues related to social and environmental elements. The implication is that companies with greater country-level governance tend to disclose less environmental information in their annual reports in the MENA region. Theoretically, however, the findings are inconsistent, to some extent, with the institutional framework which proposes that companies are mostly affected by general institutional structures that enforce them to be environmentally responsible and to disclose their environmental information through different mediums (Campbell & Hollingsworth, 1991; Campbell, 2007). This implies that civil society organisations and NGOs in the sampled MENA countries, particularly in Egypt and Saudi Arabia, could be regarded as ineffective pressure groups and sometimes their activities are controlled by official limitations (Sowers, 1999). On this basis, NGOs in these countries have shown signs of having less impact upon CED practices where the survival of companies might be related to regulative frameworks rather than social acceptance. Also, increasing the flow of the environmental information between managers and key stakeholders appeared to have fewer effects on corporate comprehensibility, reputation and image across MENA countries. This suggests that the increasing trend of CED in the MENA region seems to be linked to regulative pressures (coercive isomorphism) such as stock market regulations and corporate governance reforms rather than normative pressures.

Particularly, Voice and Accountability (V&A) variable was negatively and significantly associated with the EDI in the MENA region. This result implies that citizens in MENA countries were not truly able to contribute to choosing their governments, as well as freedom of expression and free media in the region, were ranked at the lowest levels internationally (Kaufmann et al., 2011). This means that the low level of media independence in MENA country is negatively linked to increasing the quality of the disclosed information on environmental issues by companies operating in the region. In other words, the trend of CED in the region is most likely related to formal regulations, and official requirements (regulative pressures) rather than resulting from firms' self-choice or public pressure as indicated in studies

have been undertaken in developing countries (Agyemang, Fantini & Frimpong, 2015) which is associative of the coercive isomorphism.

Also, Government Effectiveness (GE) has an insignificant positive association with the EDI. This is potentially related to incremental improvements in the level of public services quality, and the degree of independence in these services from political pressures in the MENA countries, in particular, after the phenomena of the *Arab Spring*. In this case, firms disclose their environmental information, not only because of the efficiency of government in managing the relations and cooperation between the public and private sectors but as a consequence of government control over companies and their resources which could be reflective of coercive pressure. In this context, Berglöf and Pajuste (2005) asserted that firms' voluntary disclosure is relating to a country's legal framework and governance practice; however, this proper respect might either be positively or negatively correlated with companies' performance and disclosure practices.

Additionally, the results report a significant negative relationship between the Control of Corruption (CC) and the EDI in the MENA region. This result suggests that countries having less control of corruption in the area might not have a better environmental reporting. This finding was inconsistent with the previous evidence of corporate disclosure practices (Claessens & Laeven, 2003; Shen & Lin, 2012; Essen et al., 2013) which advocated that companies in less corrupt states are more likely to disclose information voluntarily. The result, nevertheless, is in line with Fan et al. (2014) that argued that managers of Chinese companies intend to manipulate accounting information in order to cover their opportunistic behaviour with respect to expropriating interests from certain investors. Thus, the transparency and accountability of accounting information are diminished. Arguably, public power is poorly exercised for private gain, with both primary and petty forms of corruption in MENA countries (Belal, 2001; Kaufmann, Kraay, & Mastruzzi, 2009). In other words, the low level of environmental disclosure in MENA region apparently demonstrates inadequacy and ineffectiveness of countries' regulatory framework. Furthermore, corporate disclosure might also be attributed to distinct socio-economic factors in the area. Noticeably, the current political instability, deteriorating law, extensive corruption, and the elite social influence seem to encourage less environmental disclosure practices in the MENA region.

Concerning region-specific pressures, the associations between CED and each business culture and business environment have been examined. The variations in CED amongst MENA

countries could be related to the business culture. Notably, Arab MENA countries having economic and historical associations with France (i.e., Morocco, and Tunisia in the study sample) appeared to have a relatively small amount of listed corporations (respectively 73 and 56, for the period completed in 2014). Other stock exchanges in the region are having advantageous economic links with the British business culture, such as Egypt, and the GCC countries (e.g., Kuwait, Oman and Saudi Arabia) have a comparatively greater number of listed firms (respectively, 219, 205, 119 and 169 for the period finished in 2014). Also, the expectations and requirements of firm disclosure in European countries are less than them in Anglo-American countries (Saudagaran & Biddle, 1992). Significantly, firms operating in countries tied with British business culture (e.g. Egypt and Saudi Arabia), are more likely to provide the environmental disclosure practices more than other firms have French heritage (e.g. Tunisia) (Akrout & Othman, 2013). The results of the current study are a reliable reflection of substantial variability in CED between MENA countries which reflects different business cultures inherited in those states from former colonists and current business partners. The findings indicate that countries linked to British business culture (i.e., Egypt, Kuwait, Qatar, Oman, Saudi Arabia and UAE) provided the highest environmental disclosures in the MENA region with mean values 17.29%, 13.53%, 13.60%, 13.04%, 15.15% and 12.38%, respectively. On the other hand, the lowest CED was documented in Tunisia (6.18 mean value) which is tied to French business culture. These findings are also supportive of Saudagaran & Biddle (1992), Nobes (1998), Othman & Zeghal (2010) and Akrout & Othman (2013) that document a significant positive relationship between voluntary disclosures (including CED practices) and the British (Anglo-American) business culture. These outcomes offer a solid evidence supports the necessity of establishing new environmental regulations and requirements by security markets in the region essentially in former French colonies (i.e., Morocco and Tunisia). In this respect, Tunisia has established, in 2009, the Tunisian Institute for Corporate Governance (TICG), which develops corporate disclosure practices for the future. Morocco has also prepared a reform for good corporate governance and disclosure practices in 2008.

Indeed, business cultural values have a significant role in encouraging professionals to adopt CED practices in the MENA region, reflective of normative institutional pressures (Nobes, 1998). For instance, the accounting profession in Egypt, in particular, the disclosure practices have been initially followed in the UK which had colonised Egypt for nearly 70 years (Eltkhtash, 2013). Primarily, the British business culture has influenced accounting profession and CED practices in Egypt, and this could be an indicator of the level of environmental

information that has been reported by Egyptian firms in comparison with the other MENA counterparts.

Additionally, consistent with Eltkhtash, (2013), the results of this study present that business environment (oil-based economy or not) or sub-regions (GCC or non-GCC) have substantially clarified the variations in CED amongst Arab MENA companies. Theoretically, mimetic isomorphism could explain the variability in CED between the MENA sub-regions (GCC and Non-GCC). In particular, corporations that are working in each sub-region are sharing a similar business environment, and common cultural and political characteristics; thus they may perhaps imitate each other in reporting their environmental information which might lead to a society of practice (mimetic isomorphism).

The next section concludes the chapter.

8.4 Conclusion

This study examined the annual report disclosures of environmental information using a sample of 180 companies listed on nine stock markets in the Arab MENA region. The main trend in the region is towards increasing CED amongst different industries over time. However, the disclosed amount of environmental information in the Arab MENA region is still insufficient in comparison with its developed counterparts, where 13% mean value of CED for the combined sample, representing about 7 items on overage have been disclosed out of 55 disclosure-item, is still regarded a small percentage of the disclosure. Therefore, this study call for more collaboration between the different governmental and non-governmental authorities to encourage more corporate environmental performance and disclosure practices in the region.

These results also propose diversified and concentrated patterns in CED reported by MENA companies. Environmental policy was the most disclosed category amongst MENA firms, indicating that a lot of businesses irrespective of their overall CED have nevertheless reported on environmental policy information. Regarding the financial category, the second-ranked in the results, it seems to suggest that a change might be occurring since Eljayash et al. (2012) reported a lack of information regarding environmental spending and costs by oil firms in the Middle East – although information on actual and planned expenditure on pollution control (represented by two of the items) is still found to be very limited in the current study.

The findings of the statistical analysis (multivariate regressions) suggest positive and significant associations between firm-specific characteristics (firm size, profitability, leverage,

sector type, and auditor type) and the disclosure of environmental information in the MENA region. These results are in line with previous CED literature. Also, the investigation of the country-level determinants of CED (i.e., voice & accountability, government effectiveness and control of corruption) has offered mixed results. Whereas the coefficient on GE was insignificant and positive, the coefficients on V&A and CC were negative and significant. The investigation of the variations in CED by using country-level governance indicators might be a considerable empirical contribution of the current study to the literature of CED in both developed and developing countries. These results are consistent with Baldini et al. (2016) that points out that the effect of country-specific characteristics on social and environmental disclosure is varied in that they might either encourage or discourage the levels of disclosure. Theoretically, however, the findings were inconsistent, to some extent, with the institutional framework which proposes that companies are mostly affected by general institutional structures that influence their environmental behaviour and disclosure (Campbell & Hollingsworth, 1991; Campbell, 2007). This means that the pressures of NGOs, public and private rules on firms to be more environmentally accountable have shown signs of being insufficient in promoting more CED in the region compared to other developed and developing countries.

The results also report a positive and significant relationship between EDI and business culture. In contrast, a significant negative association was reported between GCC and EDI. Interestingly, the findings indicate that business culture sounds to have a significant influence on CED in the region, as the highest disclosed environmental information was recorded by companies linked with British business culture. This implies that the variability in CED practices seems to be comprehensively explained by business culture in the region.

Theoretically, the study has used an institutional framework to offer a more cohesive understanding of the variability in CED using multilevel variables employed at the firm, country, and regional scales of analysis. For example, the environmental disclosure of the large firms could be a result of facing greater pressures from key stakeholders (e.g., shareholders and governmental bodies), reflective of coercive institutional forces. Similarly, companies operating in the same type of sector (i.e., industrial and services sectors) tend to have comparable CED practices which could be explained by the mimetic isomorphism. Additionally, companies characterised by similar business culture, and business environment are looking to have comparable levels of CED practices, associative of both normative and mimetic pressures.

In the next chapter of the thesis, the ninth chapter, the conclusion of this study will be comprehensively reported including a summary and conclusion of the findings, the central limitations, the expected implications, contributions and the recommended studies for future.

Chapter Nine: Conclusion

9.1 Introduction

Chapter nine discusses the conclusion of this thesis. It has achieved five primary objectives. First, it concludes the findings of the study. In this regard, the results based on exploring the levels, trends and patterns of CED practices in the Arab MENA region, the multivariate regression analyses, and robustness analyses are summarised. Second, it explains the implications of the results, and where possible, makes suitable recommendations. Third, this chapter also summarises the key contributions of the current study to the existing literature. Fourth, it acknowledges the main limitations of the study. Finally, the chapter categorises suggested avenues for future research.

9.2 Summary of Research Findings

This section seeks to highlight the main findings of the two stages of analysis. First, it highlights the results of the exploratory part of the investigation that document the levels, trends and patterns of CED practices in the Arab MENA companies at both country and regional scales of analysis. Second, the section summarises the empirical results of the explanatory stage that investigates multilevel determinants of CED in the region employed from an institutional perspective.

9.2.1 Findings based on exploring the Levels, Trends and Patterns of CED Practices in the Arab MENA Region

As has been discussed in chapters one, and three, the literature reports that the majority of CED studies have been carried out in countries with developed capital markets, with little attention being paid to CED in developing countries (Bebbington & Kuipers, 1994; Gray, 2006; Islam & Deegan, 2008). The literature is also comparatively silent about the CED practices in the MENA region (Akrout & Othman, 2013; Eljayash et al., 2012). This study addresses some of the apparent empirical gaps identified in existing studies conducted in the MENA region by applying a 55-item disclosure index, and utilising data gathered across multiple sectors and covering a five-year period from 2010 to 2014. The annual reports of 180 listed firms in nine Arab MENA emerging markets were analysed over the period of study. The analysis procedure explored CED levels, trends and patterns at both country and the regional scales, thus moving from a micro level (i.e. company-specific) to a macro degree of analysis (i.e. country-specific and region-specific).

As has been reported in chapter five, the findings of conducting content analysis indicate substantial variability in CED documented across the nine MENA countries. The highest environmental disclosures were provided by companies operating in Egypt and Saudi Arabia. On the other hand, the lowest environmental disclosures have been reported by Tunisian firms. Furthermore, the results suggest that the other Gulf Co-Operation Council (GCC) countries (Kuwait, Oman, Qatar, and UAE) and Morocco provided comparable percentages of environmental information in their annual reports. Also, there is an increasing trend of CED practices at the country level as has been noted in the results.

As argued in chapter eight, Egypt has reported a higher level of environmental information than the other sampled MENA countries. In this regard, the British rule in Egypt since 1882 lasting for nearly 70 years has influenced the accounting profession in Egypt and, in particular, by institutionalising disclosure practices initially followed in the UK (Eltkhtash, 2013). Likewise, Capital Market Law No. 95/1992 in Egypt consists of provisions for the disclosure of certain social and environmental elements (Hanafi, 2006). It has been argued that the enactment of comprehensive environmental protection laws might lead to new environmental accounting regulation related to CED practices (UNCTAD, 1996). These environmental regulations and initiatives could, thus, be attributed to the recorded level of CED practices in those countries. Also, the trend of CED in Saudi Arabia could be linked to implementing comprehensive national environmental standards aimed at attracting foreign investments, which have potentially affected firms' environmental performance and consequently the environmental reporting in the country (Naser, 2013). In addition, MENA companies have been likely to be affected by the regulatory constraints such as corporate governance reforms and stock market requirements (e.g., the implementation of IFRS) resulting in increasing CED in annual reports (Dobler, Lajili, & Zeghal, 2011). Other legislative frameworks promoted within the region, such as that which was adopted in 2011 in Morocco, to give an impetus to the establishment of environmental and sustainable development (United Nations Environment programme, 2012), also reflect the incremental trend of CED practices in the country, noted in the findings of this study.

At sub-index level, the findings, as have been explained in chapters five and eight, indicate a high proportion of disclosure for the items included in environmental policy sub-index, followed by those classified into environmental financial sub-index. In contrast, the lowest disclosure was scored by the environmental energy category. Meanwhile, comparable levels of

disclosure were also seen in the environmental product-process (pollution) and environmental other sub-indices. These results suggest diversified and concentrated patterns in CED reported by MENA companies.

As has been discussed in chapters two and five, fundamental insights are further observed from the environmental information disclosed by the sampled firms with all the 55 individual items at the regional level. Firstly, there is a substantial variation in the individual items of the EDI amongst the sampled MENA companies. Secondly, the data shows an incremental trend in the disclosure of environmental items over time. This outcome is consistent with the prior literature in developed and developing countries that indicated changes in CED over time (Campbell & Beck, 2004; Henry, 2008).

In brief, the results of the first stage of the analysis indicate variability in, but increased trends of, CED in the MENA region over time at both country and regional scales of analysis. Arguably, there are four potential reasons for this trend. First, this trend could be indicative of governmental regulations and pressures on businesses to be more environmentally responsible which motivated them to disclose environmentally related information in their annual reports (Elsayed & Hoque, 2010). Second, CED in MENA countries seems to be influenced by the desire to attract more foreign investors to the specific sectors (Hussainey et al., 2011). Third, as a set of reporting standards has not been established in the MENA region yet, the listed firms in the region are required to follow IFRSs in order to be compliant with their stock markets requirements (Al-Shammari et al., 2008). This means that the increasing trend of CED amongst MENA companies gives signs of being influenced by the implementation of IFRS. Finally, the regulatory frameworks in the region encourage more voluntary disclosure of environmental-related information in the annual reports (Khasharmeh & Suwaidan, 2010). Therefore, this regional-wide trend of CED seems to be affected by newly established corporate governance reforms and stock market requirements (such as IFRS implementation).

However, firms' environmental disclosure is still quite insignificant in the region compared to developed countries; as on average just 7 out of 55 environmental items (13%) were recorded by MENA companies at the regional level. This implies that CED is still at an early stage of development in the region, and needs more attention from companies, governments, and civil society organisations, amongst others to propagate further development.

The following section summarises and discusses the findings obtained from the stage of statistical analysis in the current study.

9.2.2 Findings based on the Multivariate Regression Analyses

As has been discussed in chapters seven and eight, and consistent with previous studies that applied balanced panel data (Elghuweel, 2015; Ntim, 2009; Ntim & Soobaroyen, 2013); the empirical examination conducted by using Ordinary Least Squares (OLS) technique. OLS is regarded an efficient estimation method to deal with the pooled panel data (Wagner, 2005).

As was explained in chapter four, the multilevel determinants of CED in the region have been investigated and explained from an institutional perspective. These variables are firm-level determinants (firm size, profitability, leverage, sector type, and auditor type), country-level determinants (voice and accountability, government efficiency and control of corruption), and finally region-level determinants (business culture and business environment).

As has been discussed in chapter seven, the coefficients on firm size, profitability, leverage, voice & accountability, control of corruption, business culture, type of industry, type of audit and sub-region are statistically significant. In contrast, the coefficients on government effectiveness and GDP are statistically insignificant. The positive coefficients are on firm size, profitability, leverage, government effectiveness, business culture, type of industry, type of audit and GDP, whereas, the negative coefficients are on voice & accountability, control of corruption and sub-region (business environment) variables. These results suggest that the hypotheses 1, 2, 3, 5, 8, and 9 were accepted, but the assumptions 4, 5, 6, and 10 have been rejected that there are statistically positive and significant associations between these variables and EDI.

Therefore, the results report a significant positive relationship between EDI and each of firm size, profitability, leverage, British business culture, sector type, and type of audit. Findings also specify a strongly significant negative relationship between EDI with voice & accountability, control of corruption and GCC countries, and insignificant positive relationship with government efficiency.

Institutional theory has been employed to interpret the associations between EDI and the explanatory variables. Regarding firm-specific characteristics, the three pressures of isomorphism have been used. For instance, CED practices of large firms could be explained by both coercive and mimetic pressures, where large firms could have considerable influence on

communities and face greater pressure to provide environmental information to legitimise their activities (Cowen et al., 1987). CED of small companies, nevertheless, can be ideally explained by institutional mimetic influence, as they adopt large corporations' CED to secure their legitimacy in a given context (Guerreiro et al., 2012; Hannan & Freeman, 1977). Similarly, the profitable companies are mostly deemed to be large-sized and tended to offer better disclosure practices to enhance their reputation in a given society; thus other companies follow the profitable companies' CED practices in order to gain their resource and to improve their survival prospects, reflective of mimetic pressure (Haveman, 1993). Likewise, firms in the same industry could adopt similar CED practices, as well as the environmentally sensitive sectors could face greater stakeholder pressures to disclose their environmental information, indicative of both coercive and mimetic pressures (Amran & Haniffa, 2011).

Regarding country-level governance, the results are in line with Baldini et al. (2016) that states that the effects of country-specific characteristics are heterogeneous in that they might either have encouraged or discouraged the levels of firm disclosure on issues related to social and environmental elements. The implication is that companies with greater country-level governance tend to disclose less environmental information in their annual reports in the MENA region[19]. Theoretically, however, the findings indicate that companies are not largely affected by general institutional structures that might influence their environmental behaviour and disclosure practices (Campbell & Hollingsworth, 1991; Campbell, 2007). This means that civil society organisations and public and private rules seem to have less influence on CED in the MENA region. Also, increasing the flow of the environmental information between managers and key stakeholders sounds to have less impact on corporate reputation and image across MENA countries. Furthermore, institutional theory suggests that companies operating in countries with similar CLG characteristics are more likely to have similar CED practices, indicative of mimetic forces. For example, Kuwait, Oman, Qatar, Morocco, and UAE have comparable CLG indicators, and this could be attributed to comparable levels of environmental information have been published by companies working in these countries.

Additionally, institutional theory indicates that business cultural can play a significant role in encouraging professionals to adopt CED practices which reflect the normative isomorphism (Deegan, 2009; Ali & Rizwan, 2013). In addition, countries tied to British business culture

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[19] For example, Saudi Arabia has less CLG scores than Tunisia, but Saudi firms disclose more environmental information in their annual reports than Tunisian counterparts.

have published similar levels of CED practices such as Oman, Qatar and UAE (mimetic pressure). Moreover, mimetic isomorphism could also interpret the variability in CED between MENA's sub-regions (GCC and Non-GCC). Particularly, corporations working in each sub-region, which have a similar business environment, a common culture and political systems, may perhaps provide comparable levels of CED; and this might lead to a society of practices within each sub-region.

The forthcoming section of this chapter seeks to provide a sign of the extent to which the gained empirical findings are sensitive or robust to alternative estimations.

9.2.3 Findings based on Robustness Analyses

Consistent with previous literature, the potential existence of endogeneity problems has been addressed in this study. Notably, the five-step process suggested by Larcker and Rusticus (2010) for positive accounting studies is employed. Also, the phenomenon of environmental disclosure is a very sophisticated. As such, this study has depended upon a robust theoretical framework, which debatably also could raise the opportunity that endogeneity might present in the models.

As discussed in chapters four, seven and eight, the findings based on estimating a lagged-effect model were in line with the outcome of the multivariate (OLS) regression model. Although the significance and the direction of the coefficients on the majority of the study variables have remained unchanged whether an un-lagged or a lagged model was estimated, a small number of variables (i.e., profitability and GDP) presented some sensitivity levels. This could advise that there is certainly an EDI time-lag for these sensitive variables. It might also clarify the variances in observations' number between the un-lagged and lagged structures.

As has been mentioned in chapters four and seven, the applied EDI is consisting of 55 items and covering five sub-indices. These sub-indices have not been equally weighted, hence, to check the robustness or sensitivity of the central findings to the weighting of the five sub-indices, this study follows the procedure of earlier studies in constructing a weighted index (Elghuweel, 2015; Ntim, 2009). An alternative Weighted Environmental Disclosure Index, called WEDI, has been constructed, where equal weights of 20% awarded to each sub-index. The findings of the WEDI suggest more robustness of the earlier inferences from OLS model. This means that weighting the sub-indices included in the main EDI has no considerable effects on the association between the independent variables and the EDI in MENA countries.

As recommended by the Hausman test, a firm-level fixed-effects model has been estimated to check whether the original findings could be affected by unobserved firm-specific characteristics. The results of the firm-level fixed-effects recommended more robustness of the main OLS model inferences that indicated significant associations between EDI and most of the experimental variables that employed for this study.

To determine the extent to which the main outcomes are meaningfully affected by the existence of endogeneity problem, the methodology of 2SLS has also been applied. As has been discussed in chapters four and seven, in the first stage of 2SLS, each endogenous variable will be regressed on all exogenous variables. Then, the simultaneous equations will be separately estimated with the right endogenous variable substituted by its appropriate value emerged from the regression in the first stage. The findings of 2SLS indicated more support to the previous results of estimating an OLS model that there is a statistically significant relationship between the majority of the independent variables (i.e., FSIZE, PROF, LEV, V&A, CC, SEC, BIG 4, BUS-CUL, and GCC) and the EDI.

Altogether, the main findings of the current study were not expressively influenced by the presence of endogeneity problems. The following section discusses the potential implications and recommendation of the results summarised in the above sections.

9.3 Policy Implications of Research Results and Recommendations

Some implications could be drawn from the analysed levels, trends and patterns of CED practices in this study. Firstly, the analysis of EDI indicates that corporate environmental disclosures have broadly increased over the period of study. This implies that efforts by the governmental bodies and various stakeholders, amongst others, at requiring CED practices from the listed firms within the Arab MENA region, as a minimum, are starting to yield better results. Secondly, the results also report that there are still substantial variations in environmental disclosures amongst the sampled firms. A further insight of the results suggests that the witnessed variability in CED levels among the sampled firms could be clarified by firm size and moderately by industry type. This is theoretically expected because disclosure of environmental information is costly in terms of money and time, which large-sized firms are expected to afford better in comparison with smaller firms (Cormier & Magnan, 1999). Moreover, larger firms have a greater contribution to, and influence on, society and thus, they face greater pressure to disclose more information related to their environmental responsibility

and performance in the annual reports in order to gain their legitimacy within a given community (Aerts et al., 2006). Furthermore, firms working in polluting sectors pay more attention to CED practices to secure their survival prospects in the future (Laine, 2009).

The findings also have significant regulatory, policy and practitioner implications, specifically for large firms' managers, governments, and national regulatory organisations such as the Arab Forum for Environment and Development (AFED), those are interested in addressing major environmental challenges, by putting more pressure on firms to be environmentally responsible. Concerning governments and national regulatory organisations, the empirical evidence obtained in this study offers them a strong motivation to establish more effective environmental policies and initiatives that could develop CED practices in the region. About companies, the results provide CEOs with the motivations to consider the environmental issues as a significant part of their disclosure practices to gain the necessary legitimacy and to enhance their survival prospects in future within the region.

The key strength of this research is the usefulness of its practical implications in delivering data for additional development of the quality and quantity of environmental reporting in the MENA region. The value relevance or informativeness of CED is a primary issue for corporate decision-makers, investors, standard-setters, and researchers (Berthelot & Cormier, 2003). Therefore, the present study could attract more attention of those interested in CED and may be concerned about utilising its results to update any future attempt to guide companies' environmental reporting in the region, by integrating and embedding such guidelines within firms' governance structures.

This study has functional policy implications. Outcomes of this study broadly presented that many of the factors examined seem to have a robust and high impact on corporate environmental disclosure in the region. Such results have significant implications for various policymakers. It assists in informing regulators and standard-setters about the meaning of sound country-level governance in offering the ground of quality and comprehensive CED through establishing value-creating associations with some stakeholders. The results also imply a need for integrating more transparency practices into corporate reporting systems, by creating new regulations and laws relevant to CED practices, by underpinning modifications in firms' law relating to governance, and by auditing and benchmarking for CED implementation in MENA companies.

In brief, CED practices have to be voluntarily reinforced by a suitable legal framework if they could be value-creative. The current study also offers noteworthy insights for executives demanding to improve the effectiveness of their companies' environmental message that they deliver to different stakeholders, for investors looking for promoting the long-standing financial worth of their investments, for ecologists searching for inventive solutions to uphold long-term well-being and sustainability by integrating environmental notions into other disciplines, involving accounting, and for researchers seeking to associate with CED research in order to identify the fundamental associations positively.

Finally, the findings report that CED in the region is still at an early stage compared to other developed and developing counterparts. Thus, the results of the current study emphasise the critical necessity for a high-level of cooperation between environmental agencies and securities regulatory agencies to eliminate the negative consequences of pollution in the region and persuade a greater development in firms' environmental disclosure and performance. Given the paucity of research into CED within the region, the study's findings reiterate the crucial need for a more concerted effort to integrate economic, environmental and political policies to ensure sustainability within the area.

9.4 Research Contributions

This section concludes the main contributions of the study. Subsection 9.4.1 discusses the contribution of the current study to the environmental disclosure index (the methodological contribution). Subsection 9.4.2 presents the empirical contributions (the main contribution of the present study to the literature), and Subsection 9.4.3 summarises the theoretical contributions.

9.4.1 Methodological Contribution: Environmental Disclosure Index (EDI)

Since the aim of this study is to provide a comprehensive analysis of possible environmental disclosure, considerably in excess of the studies listed in Table 3.4 (p75), reference was made to other CED studies, including those in the developed world. However, the appropriateness of Western CED techniques to assess CED within the different socio-cultural contexts of developing countries has been criticized (e.g. Gray & Kouhy, 1993; Bebbington et al., 1994; Baydoun & Willett, 1995; Belal, 2001; O'Donovan, 2002). Therefore, although the content analysis instrument used by Wiseman (1982), Gray et al. (1995) and Hackston & Milne (1996) was used as a basis for this study, it was adapted and expanded to ensure its relevance to the

sample companies in two ways. First, studies of CED in developing countries, including MENA countries, were examined to identify additional disclosure items (e.g., Hossain et al., 2006; Islam & Deegan, 2010; Akrout & Othman, 2013; Ullah et al., 2014). Second, a pilot study of Saudi Arabian companies was conducted in 2014; this resulted in the inclusion of items, such as the influence of Islamic principles, within the disclosure index. This process resulted in a total of 55 environmental disclosure items in the checklist or research instrument, which is considerably more detailed and therefore more comprehensive than previous studies in the Arab MENA region (see the column 7 of Table 3.4, p75).

Differences can perhaps be discerned between different countries – though, as Table 3.4 (p75) shows since most studies are of a single country and use only a limited and varying range of environmental disclosure items and categories, such differences are to a large extent a matter of conjecture. However, there is some suggestion that, while Jordanian firms measure and report on environmental expenditure and pollution abatement (Al-Khadash & Al-Yarmouk, 2003; Ismail & Ibrahim, 2008), Egyptian firms disclose environmental policy and audit categories (Hanafi, 2006; Rizk et al., 2008). Moreover, environmental pollution and environmental energy categories were the most disclosed items in firms' annual reports in UAE (Jahamani, 2003). However, the ability to compare different countries meaningfully and convincingly is dependent upon a comprehensive and consistent checklist of disclosure items, which is a key contribution of the current study.

In conclusion, there are signs of interest by researchers in CED in the Arab MENA region, but as yet the coverage is patchy. Most studies are focused on a single country, with the environmental disclosure items checked for often relatively few in number and usually subsumed within a broader CSD study. The only multi-country study of CED (El-Jayash et al., 2012) focused exclusively on the oil and gas sector and used just sixteen environmental disclosure items. While some CSD studies examined environmental disclosure items more than this (e.g. Naser & Hassan (2013) used 25 in their study of UAE), the overall average of the studies listed in Table 3.4 (p75) is just 12.7 items, suggesting that coverage of environmental issues has tended to be limited to date. It is also difficult to compare studies, since they were conducted at different times and, more significantly, used different methods to study CED – which they say relatively little about.

In the current study, the 55 individual environmental items were categorised into five groups, which provide the basis for separate sub-indices; environmental policy (5 items), pollution by

product and/or process (22), energy (10), financial (7), and other environmental items (11). The study, therefore, has methodologically contributed to the existing literature by developing and expanding a comprehensive disclosure index which could be used to examine CED practices in the MENA region and other developing countries at large.

9.4.2 Empirical contributions

As has been previously discussed in chapters one and four, this thesis is expected to contribute to the existing literature of accounting in two different but inter-related aspects. First, the extant empirical research to date offers scant *comparative data* related to the environmental disclosure of firms across the MENA region, indicative of a lack of comprehensive regional-level studies (Kamla, 2007). As has also been discussed in the third chapter, a review of the existing CED-related studies was conducted in this study to identify the empirical gap in CED literature regarding Arab MENA countries. These studies were either confined to single-country study (Al-Drugi & Abdo, 2012) or used a few firms, one type of sectors and less than the five-year period (Eljayash et al., 2012) or focused on one point of time (Akrout & Othman, 2013). Collectively, the present study is of significant contributions stemming from the existing gap in the literature that concluded inadequate studies and measurements of CED practices in the Arab MENA region. By exploring and explaining CED levels, trends, and patterns across nine MENA countries, using a 55-item disclosure index, and utilising data gathered across multiple sectors and covering a five-year period from 2010 to 2014, the study addressed some of the apparent empirical gaps identified in existing studies conducted in the region. Likewise, providing new evidence of CED at a regional level might be used to facilitate comparisons with those of its international counterparts in order to learn more about CED internationally.

Second, as has been mentioned in chapters one, four and seven, this study also contributes to the literature by bringing empirical evidence from the Arab MENA region, where little is known about it (Eljayash et al., 2012). Notably, the study employed multiple level variables to explain the variability in CED practices across the region. Firstly, the variability in CED practices in the region was explained through firm-specific characteristics (firm size, profitability, leverage, industry type, and auditing type); secondly, country-level governance indicators (V&A, GE, and CC) have also been employed to explain the variations in CED among MENA countries; finally, the relationship between region-specific pressures (business culture and business environment) and CED has been investigated. As yet, only a small number of studies has theoretically and empirically examined how country-level institutions can

explain the variability in CED practices across countries (Baldini et al., 2016). Therefore, the current study distinctively contributes to the existing literature by investigating the critical policy questions of why and how country-level governance and region-specific pressures might influence CED practices in the MENA region from an institutional perspective. Given that, this study is built on previous literature and argues that the cross-sectional variability in CED practices might be attributed to differences in country-level indicators (Ioannou & Serafeim, 2012). The concentration on country-level governance is based on previous research on the varieties of capitalism theory (Hall & Soskice, 2001), which presented that country-level institutional indicators could result in relative institutional benefits for businesses across countries (Jackson & Apostolakou, 2010).

As has been explained in chapter four, unlike most previous MENA studies that include either small or large-sized firms in their sample, the present study sought to balance between firm size and industry type by choosing the largest and the smallest ten firms in each sector (industrial and service) using a five-year average of total assets to decrease any potential bias of sample selection as well as to improve the findings generalisability (Elmagrhi et al., 2016) (see Table 4.5, p112). Similarly, in contrast to prior studies that used either time-series or cross-sectional data, this study applied balanced pooled panel data (cross-sectional and time-series) because it tackles multicollinearity problems and offers greater freedom and informative data (Ntim, 2009). Incompatible with earlier MENA studies also, the study investigated a wide range of countries (9), a good sample of companies (180), a substantial period of years (5), and a large number of environmental disclosure items (55) contained in a research instrument designed for the content analysis – resulting in a total of 445,500 data points to feed into the calculation of the calculation of the overall environmental disclosure index as well as five sub-indices (see Table 3.4, p75).

Additionally, as opposed to previous MENA studies, the possible endogeneity problems were comprehensively addressed in the present study by estimating models based on a lagged effect, an alternative disclosure index, a firm-level fixed-effects, and two-stage least squares. These analyses suggest that the main results of this study are reliable and robust.

In presenting the first systematic, detailed analysis of CED in the Arab MENA region, the current study not only contributes an insightful picture of current practice and recent trends but also lays a solid foundation for future researchers interested in the topic.

9.4.3 Theoretical Contributions

As has been discussed in chapter three, preceding literature adopted various theoretical perspectives to underpin and interpret CED practices (Reverte, 2009). However, the vast majority of these studies seem to approve that institutional theory best clarifies variables explaining the variations in CED (Ioannou & Serafeim, 2012), addresses associations between the corporation and community and helps the understanding of the efficiency of CED within the institutional field (Brammer et al., 2012). In this sense, institutional theory complements the understanding of how companies respond to social expectations and institutional pressures (Deegan & Shelly, 2014). It assumes that institutional pressures such as soft and hard regulation could play a substantial role in monitoring corporate environmental behaviour and then disclosure practices (Campbell, 2007). Thus, this study theoretically argues that firm-specific characteristics, country-level governance, and region-specific pressures are associated with the institutional environment in which a company operates in, and thus have considerable influences upon its CED practices. Therefore, drawing on previous literature, it could be assumed that institutional theory is helpful in developing the hypotheses of the current research and in understanding how institutional structures could affect CED practices in the region.

Few studies have used institutional theory to investigate country-level determinants of environmental disclosure practices (Jackson & Apostolakou, 2010; Oliver, 1991). Furthermore, fewer studies have employed multilevel variables (company, country, and/or region) from an institutional perspective to explain CED practices (Baldini et al., 2016). Besides, the use of theoretical foundation, in general, is hardly abundant in those studies that have been conducted in MENA countries (Kamla, 2007). Expressly, there is a dearth of using institutional theory to interpret social and environmental disclosures in the MENA region at both single-country and regional studies.

On the basis of the restrictions in the present CSR research, future research is contended to unpack the basic theoretical foundations to interpret corporate disclosure from a broader societal aspect (Lee, 2008). The analysis of country-level factors is considered as a relatively new topic that needs to be investigated to go into detail about variables explaining CED (Sotorrío & Sánchez, 2008). This study, therefore, employs an institutional framework to interpret the development of CED practices from both the organisational field (micro) and societal (macro) levels. The study also addresses calls by Husted and Allen (2006) that stated that more studies are required to employ the mimetic, coercive and normative isomorphism in interpreting the adoption of CED practices in a given context.

In addition, the study contributes to institutional theory, by not only investigating a single-country as in other studies (e.g., Amran & Haniffa, 2011; Bansal, 2005). The research examines a considerably large sample of companies (180) from 9 MENA countries over a relatively long panel (2010-2014), as compared to studies in Table 3.4 (p75). In this sense, Dhaliwal et al. (2011) suggest that due to the varied institutional and national legal settings, international research in CED would be greatly beneficial.

Additionally, the study contributes towards extending the understanding of isomorphism and its influences upon CED across the countries in the MENA region. For example, Campbell (2007) suggested that companies are likely to be environmentally responsible if there are NGOs in their institutional environment that can observe and change corporate environmental performance and disclosure, reflective of a normative isomorphism. The findings of this study nevertheless suggest that civil society organisations and NGOs in the sampled MENA countries seem to have less influence on CED practices. More specifically, the survival of companies in the MENA region could be associated with regulative pressures rather than social acceptance. For instance, NGOs in Egypt are acting as social networks where the government fails to give support. However, they are not effective pressure group and sometimes restricted by official limitations on their activities (Sowers, 1999). Similarly, NGOs and civil society organisations in Morocco are also taking an interestingly active role in promoting corporate social and environmental performance. Nevertheless, they are yet to be considered as key players in observing and monitoring CSER practices in the country (Morocco Responsible Business Conduct, 2017). This means that CED in the MENA region appeared to be better interpreted by coercive isomorphism rather than normative isomorphism. Likewise, the results propose that firms disclose their environmental information, not only because of the efficiency of government in managing the relations and cooperation between the public and private sectors but as a consequence of government control over companies and their resources which could be interpreted by employing a coercive pressure. Such coercive forces and other mimetic and normative pressures were comprehensively used to explain the results of this research.

The following section summarises the key limitations of the current study to assist as a guide for any explanations of the results of this study.

9.5 Research Limitations

Despite the fact that the results of this study are robust and relevant, comparable to any other empirical evidence, this study suffers from several limitations which need to be acknowledged.

Most of those possible limitations have previously been discussed in detail in chapters three and four. The first weakness is related to the Environmental Disclosure Index (EDI) developed for this study purposes. Firms in different industrial and service sectors were not responsible for precisely the same areas. Thus, the motives for disclosure and non-disclosure in some specific categories (sub-indices) might have been their irrelevance. Second, and as has been clarified in chapter four, there could be problems of reliability and validity with the constructed EDI. The EDI was built and developed using a binary coding process rather than the ordinal scheme. Some earlier evidence debated that binary method of coding could be less informative (Barako et al., 2006). Similarly, the EDI is an unweighted disclosure index. Nevertheless, unweighted indices have been thoughtfully criticised for giving all environmental items equal scores, a view which is not in line with both practice and theory (Barako et al., 2006; Ntim, 2009). As has been reviewed in chapter four, there is an overall absence of a rigorously established theoretical foundation on which different weights may be precisely allocated to the various environmental items (Black et al., 2006). In this respect, using an unweighted disclosure index avoids making subjective judgments as to the effectiveness or relative significance of each environmental items included in the EDI (Owusu-Ansah, 1998). This means that the constructed disclosure index is irrelevantly biased towards, or controlled by, a particular set of environmental items.

Furthermore, sound empirical evidence relevant to the literature of accounting disclosure proposes that using unweighted and weighted disclosure indices tend to offer similar findings, especially when the number of the environmental items included in the EDI was comparatively large (Beattie et al., 2004). Also, consistent with former CED literature, an unweighted disclosure index was constructed to be more flexible method for making direct comparisons in order to be drawn with their findings (Campbell & Beck, 2004; Gray et al., 1995; Hackston & Milne, 1996; Islam & Deegan, 2010; Wiseman, 1982).

Third, the environmental data has been collected only from companies' annual reports. It may have been verified together with other sources of data, such as face-to-face interviews and questionnaire survey. However, and as has been discussed in chapter four (methodology chapter), contrary to other mediums (e.g., website and standalone reports), the firms Act and the listing rules in the nine MENA stock exchanges command listed companies to prepare annual reports. Arguably, the compulsory nature of publishing companies' annual reports made them a reliable and regular source of environmental information (Hackston & Milne, 1996). Similarly, prior evidence recommends that the level of disclosure within the annual report is

positively associated with the amount of environmental disclosure provided through other mediums (Botosan, 1997; Lang & Lundholm, 1993). Furthermore, and for practical motives, only firm annual reports were freely and consistently available in Perfect Information, Trade Mubasher, and the websites of the nine sampled stock exchanges in the region, where the annual reports have been essentially collected from. Additionally, using corporation's annual reports is also consistent with previous studies, which enabled establishing direct comparisons with their findings (Cheung & Wei, 2006).

Fourth, the sample size of 180 listed firms in this study could be deemed as a small size compared to those studies that have been carried out in developed countries. In this regard, the dependent variable (EDI) and firm-specific characteristics data (TA, ROA, and DOA) has been manually collected, which needed a long time and hence, limited the researcher's concentration to a sample of 180 MENA firms during a five-year time. However, a sample of 180 firms is substantially larger than the samples of previous MENA studies (see Table 3.4 p75). For instance, Eljayash et al. (2012) investigated CED practices in 58 companies operating in ten Middle Eastern countries. Besides, the sample of 180 companies produced a total of 900 firm-year observations, and formed a substantial proportion of the total potential sample, in addition to the overall percentage of the listed firms in nine MENA stock markets. It constitutes roughly 20.50% of the useable final sample of 878 firms (see Table 4.5, p112), in which the statistical sampling theory (central limit theorem) advocates that it could be adequately sufficient sample size (Anderson & Moore, 2007; Watsham & Parramore, 1997). Additionally, collecting data manually from annual reports (i.e., EDI, TA, ROA, DOA) is considered a highly labour-intensive action (Hussainey, Schleicher, & Walker, 2003). Consequently, some limitations related to time, finance and effort destined that the sample of this study should be reduced to an amount that is statistically meaningful to make a major contribution, although simultaneously confirming that the study is fulfilled within the arranged time-frame of a PhD thesis.

Fifth, the five-year period seems to be relatively short compared with studies have been conducted in developed countries. This point was, however, longer than most of the previous MENA studies such as Akrout & Othman (2013) which was based on a one-year sample.

Finally, for reasons related to capital structure and regulations, the sample of the current study also excluded financial firms where further insights could be expanded by investigating such distinctive companies. As has been discussed in chapter four, this is commonly consistent with

previous studies (Haniffa & Hudaib, 2006; Mangena & Chamisa, 2008; Ntim, 2009). Altogether, these weaknesses could limit the generalisation of the results of this study.

The results of this research must, thus, be understood in light of these limitations as mentioned earlier. Moreover, these restrictions possibly regarded as avenues for future studies. Hence, the next section figures out probable avenues for future improvements and research.

9.6 Directions for Future Studies and Improvements

In examining the environmental information disclosed in the annual reports of a sample of listed firms in Arab MENA countries, this study introduces areas for further research.

Firstly, the EDI adopted, developed and applied in this study can be utilised to provide insights into the extent and nature of CED practices in other developing countries such as Iran, Nigeria, Cuba, etc. Secondly, the EDI can also be applied to analyse other mediums of environmental disclosures, such as websites and standalone environmental reports, sustainability reports, interim reports, etc. Thirdly, the reported CED practices of firms operating in Arab MENA countries might be used to facilitate comparisons with those of their international counterparts. The information that gathered from those various reports could present a clearer picture of CED practices in the region.

Fourthly, this study employed a disclosure index to measure the levels of CED practices in nine MENA countries. Future studies could apply other techniques in relation to collecting CED data from annual reports by using content analysis such as the number of words, sentences, paragraphs, pages and other methods. Furthermore, other measurements of CED practices, if possible, could be utilised for future research such as DJSI, and KLD index.

Fifthly, this study has focused on the measurement of CED quantity in the MENA region, using unweighted disclosure index. Future research might employ other types of indices to measure the quality of CED practices in the area such as a qualitative index that measures the type of environmental information (comparability), direction (understandability), outlook (relevance of data) and verifiability of environmental data. Using both sides of quantitative and qualitative measurements of CED could draw a comprehensive picture of annual report disclosure of environmental information by companies listed in MENA emerging markets.

Sixthly, this study investigates CED practices amongst 180 firms listed in nine MENA emerging markets between 2010 and 2014. Future study may apply a longitudinal method by employing longer years' data and larger size of the sample. This point could increase the reliability of the findings.

Seventhly, the current study concentrates on CED in the MENA region. Future studies could be a comparison of cross-sectional research in MENA and other world regions such as North America, Western Europe, South East Asia, amongst others. Future research can compare the study of developed and developing countries to understand the nature and extent of CED and its relations with the different socio-cultural contexts of those regions.

Finally, future studies could apply the institutional framework that has been developed in this study to interpret or examine how companies could, for instance, contribute towards addressing the other main environmental challenges in other developing countries.

9.7 Conclusion

The outcomes of the study provided a new comprehensive empirical evidence of CED levels, trends and patterns in the MENA region at both country and regional levels of analysis. The findings indicated a low level of environmental information had been reported by listed firms in nine stock markets in the Arab MENA region in comparison with their developed and developing counterparts. However, an increasing trend of CED practices has been noted in these findings at both country and regional levels of analysis over the period of study. Also, considerable variations in CED has been documented at a country level (i.e. highest CED being reported in Egypt and Saudi Arabia, and the lowest CED being recorded by Tunisia). The highest disclosed environmental categories in the region are the environmental policy and financial categories, while the lowest published group is the disclosure of energy-related information.

In the explanatory part of the analysis, the findings presented positive and significant associations between firm-specific characteristics and environmental disclosure in the MENA region. Also, the effect of country-specific characteristics is heterogeneous in that they might have either enhanced or reduced the levels of CED practices in the Arab MENA region. Interestingly, the results of the current study found that business culture shows signs of being one of the significant determinants of CED in the region, as the highest disclosed environmental

information was recorded by companies linked with British business culture (e.g., Egypt and Saudi Arabia) and the lowest CED was scored by companies linked to French business culture (i.e., Tunisia).

Institutional theory has been employed to interpret the associations between EDI and the explanatory variables. Regarding firm-specific characteristics, the three pressures of isomorphism have been used. Theoretically, also, the findings indicate that companies in the region appeared to be slightly affected by general social structures that might influence their environmental behaviour and disclosure practices. This means that civil society organisations and public and private rules seem to have less influence on CED in the MENA region. More specifically, the survival of companies in the MENA region might not be considerably associated with the social acceptance. This implies that companies' environmental disclosure seemed to be comprehensively explained by regulative (coercive) pressures such as corporate governance reforms and equity market requirements (i.e., IFRS implementation) rather than normative pressures.

This chapter asserted that the results of the research have significant regulatory, policy and practitioner implications. Specifically for large firms' managers, governments, and national regulatory organisations, those are interested in tackling major environmental challenges, where this evidence offers a strong motivation to establish more effective environmental policies and initiatives that could develop CED practices in the region. Also, the results provide CEOs with the motivation to consider the environmental issues as a significant part of their disclosure practices to gain the required legitimacy and to enhance their survival prospects within the region.

The central contributions have been summarised in this chapter. The findings offer a comprehensive documentary of the levels, trends, and patterns of CED in the Arab MENA companies at both country and regional basis. This study also discussed the need to understand the factors which motivate firms to engage (or not) in CED practices within the region. Theoretically, furthermore, fewer studies, especially those conducted in MENA countries, have employed institutional theory to interpret CED practices.

Although these results are robust and relevant, some limitations have been acknowledged in this chapter. First, the EDI and firm characteristics data have been manually collected from companies' annual reports, which needed a long time and hence, limited the concentration of this study to a sample of 180 listed firms in nine MENA stock exchanges during a five-year

time. Second, firms operating in the financial sectors have been excluded from the final sample, where further insights could be expanded by investigating such distinctive companies. Third, the limitation associated with the adopted EDI, since companies in different industries were not responsible for accurately the same areas. Therefore, the reasons for disclosing specific environmental categories or not could have been their irrelevance.

Finally, this chapter drew attention to potential future research. In future studies, researchers might be able to provide new insights by investigating how the developed EDI in the current study could be applied to the extent and nature of environmental disclosure in other developing countries. Furthermore, the EDI could also be employed to measure CED practices within other mediums (e.g., standalone environmental reports and websites). Additionally, future studies could apply the institutional framework that has been developed in this study to examine how companies could, for instance, contribute towards tackling other significant environmental challenges in other developing countries.

Appendices

Appendix 1: A Spread Sheet of coded Environmental Items for the First Five Sampled Firms within the Sub-index A in Alphabetical Order.

Firm code	Year	Item1	Item2	Item3	Item4	Item 5	Sum	Percent
	2010	1	1	1	0	0	3	0.6
	2011	1	1	1	0	1	4	0.8
EIB1-52	2012	1	1	1	0	1	4	0.8
	2013	1	1	1	0	1	4	0.8
	2014	1	1	1	0	1	4	0.8
	2010	1	1	1	0	1	4	0.8
	2011	1	1	1	0	1	4	0.8
EIB2-38	2012	1	1	1	0	1	4	0.8
	2013	1	1	1	0	1	4	0.8
	2014	1	1	1	0	1	4	0.6
	2010	1	1	1	0	0	3	0.6
	2011	1	1	1	0	0	3	0.6
EIB3-163	2012	1	1	1	0	0	3	0.6
	2013	1	1	1	0	0	3	0.6
	2014	1	1	1	0	0	3	0.6
	2010	1	1	1	0	0	3	0.6
	2011	1	1	1	0	0	3	0.6
EIB4-156	2012	1	1	1	0	0	3	0.6
	2013	1	1	1	0	0	3	0.6
	2014	1	1	1	0	0	3	0.6
	2010	1	1	0	0	0	2	0.4
	2011	1	1	1	0	0	3	0.6
EIB5-53	2012	1	1	1	0	0	3	0.6
	2013	1	1	1	0	0	3	0.6
	2014	1	1	1	0	0	3	0.6

Appendix 2: A Normal Histogram of the Distribution of the EDI

Histogram

Mean = .1297979797979798
Std. Dev. = .0968446352842158
N = 900
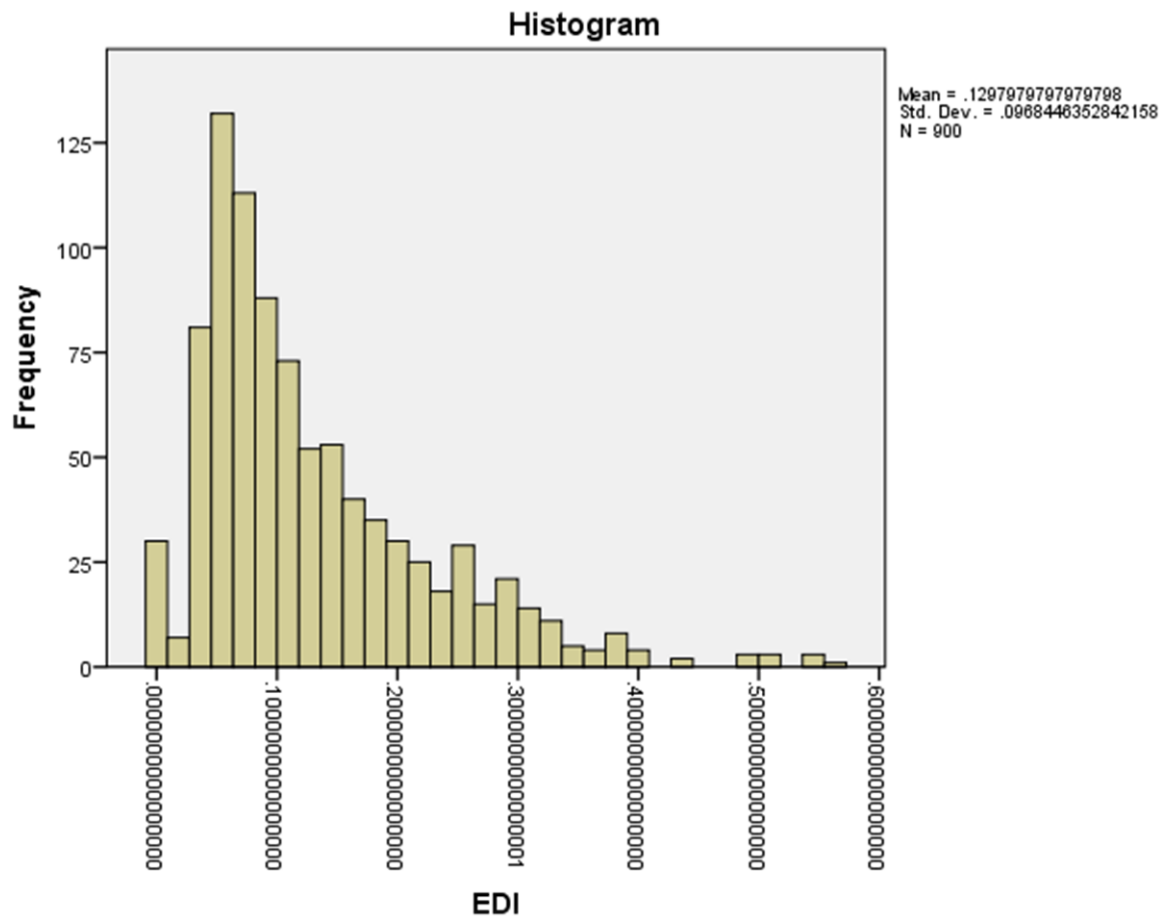
Appendix 3: The CED levels among Sampled Firms in Egypt						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Egypt (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental policy: General statements of "the firm will, or the firm does" nature	100	100	100	95.0	100	99.0
Actual statement of policy	100	100	100	95.0	100	99.0
Statements demonstrating that pollution caused from firm's operations will be or has been reduced	30.0	45.0	50.0	45.0	50.0	44.0
Disclosing polices of firm's energy	0.00	0.00	0.00	0.00	0.00	0.00
The assessment of Investments to involve such concerns towards the surrounding environment	15.0	25.0	30.0	25.0	35.0	26.0
Environmental product-process: The management of waste(s)	50.0	60.0	55.0	50.0	55.0	54.0
Eco efficiency	5.00	20.0	20.0	25.0	25.0	19.0
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	35.0	45.0	50.0	45.0	50.0	45.0
Climate change, carbon sequestration.	5.00	10.0	10.0	10.0	10.0	9.00
Products & product development, involving products that assist in protecting the environment.	15.0	20.0	25.0	20.0	30.0	22.0
The information of air emission.	25.0	20.0	25.0	20.0	30.0	24.0
The information of water discharge.	15.0	15.0	20.0	10.0	30.0	18.0
Research conducting on new production approaches that used to reduce the environmental pollution.	0.00	0.00	0.00	0.00	0.00	0.00
The technologies of pollution prevention.	5.00	10.0	10.0	5.00	10.0	8.00
The control of industrial process pollution.	10.0	10.0	15.0	10.0	15.0	12.0
The reductions of business operations pollution.	10.0	10.0	15.0	10.0	15.0	12.0
The disposal information of Solid waste(s).	0.00	0.00	0.00	0.00	0.00	0.00
Natural resources conservation.	0.00	0.00	0.00	0.00	0.00	0.00
The plant of waste products Recycling.	5.00	5.00	5.00	0.00	5.00	4.00
The plant of effluent treatment installation.	10.0	15.0	10.0	15.0	20.00	14.0
The programs of Land forestation and reclamation.	0.00	0.00	0.00	0.00	0.00	0.00
The conservation of raw materials.	0.00	0.00	0.00	0.00	0.00	0.00
Total direct and indirect greenhouse gas emissions.	10.0	10.0	10.0	5.00	10.0	9.00
Initiatives to reduce greenhouse gas emissions.	5.00	10.0	10.0	5.00	10.0	8.00
Emissions of ozone-depleting substances by weight.	5.00	10.0	10.0	5.00	10.0	8.00
Undertaking of wildlife conservation.	0.00	0.00	0.00	0.00	0.00	0.00
Noise	0.00	0.00	0.00	0.00	0.00	0.00
Environmental Energy: The conservation and the saving of energy.	45.0	45.0	50.0	50.0	55.0	49.0
Use/ exploration/ development of new sources, insulation, efficiency etc.	15.0	15.0	15.0	10.0	15.0	14.0
Waste materials utilization for energy conservation.	5.00	5.00	5.00	5.00	5.00	5.00
Initiatives to reduce the consumption of energy.	10.0	10.0	10.0	5.00	10.0	9.00
The Voicing of firm's concern about the shortage of energy.	5.00	5.00	5.00	0.00	5.00	4.00
Direct use of energy.	5.00	5.00	5.00	5.00	5.00	5.00
Indirect use of energy.	0.00	0.00	0.00	0.00	0.00	0.00
Energy saving's disclosure caused by product recycling.	0.00	0.00	0.00	0.00	0.00	0.00
Disclosing increased energy efficiency of products.	5.00	0.00	5.00	0.00	5.00	3.00
Receiving awards for the programmes of energy conservation.	0.00	5.00	0.00	0.00	0.00	1.00

Continuation of Appendix 3						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Egypt (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental financial: The discussions of areas with economic / financial impacts.	40.0	25.0	35.0	30.0	40.0	34.0
The discussion of economic- environmental interaction.	15.0	20.0	25.0	20.0	20.0	20.0
Provisions, contingencies.	65.0	55.0	75.0	90.0	100	77.0
Environmentally related loans, costs of purchasing, grants and installing new environmental friendly equipment & machines and consultancy costs & maintenance.	20.0	20.0	20.0	20.0	25.0	21.0
Previous & present expenditure for pollution control.	10.0	10.0	10.0	5.0	15.0	10.0
Expenditures estimated in future for pollution control facilities and equipment.	10.0	10.0	5.0	5.0	15.0	9.0
Allocation record of specific fund.	30.0	40.0	30.0	50.0	60.0	42.0
Environmental other: Environmental education	0.00	0.00	0.00	0.00	0.00	0.00
Training related to environmental management and environmental accounting for employees, accountants and managers.	30.0	30.0	35.0	25.0	30.0	30.0
Environmental awards.	30.0	30.0	25.0	30.0	40.0	31.0
Environmental research.	5.0	10.0	5.0	10.0	10.0	8.0
Partnerships between environmental research institutions and businesses.	5.00	5.00	5.00	5.00	5.00	5.00
A moral responsibility enhancement affected by Islamic principles.	10.0	10.0	10.0	10.0	10.0	10.0
Maintenance the balance of environment.	0.00	0.00	0.00	0.00	0.00	0.00
Protect & enhance future generation's well-being.	0.00	0.00	0.00	0.00	0.00	0.00
Designing facilities which are harmonious with the surrounding environment.	0.00	0.00	0.00	0.00	0.00	0.00
Contribution to beautify the environment in terms of art/sculptures or cash.	0.00	0.00	0.00	0.00	0.00	0.00
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	0.00	0.00	0.00	0.00	0.00	0.00
The total level of CED practices	14.82	16.27	17.18	18.55	19.64	17.29

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in Jordan (%)					
	2010	2011	2012	2013	2014	Mean
Environmental policy: General statements of "the firm will, or the firm does" nature	85	85	85	95	100	79.18
Actual statement of policy	90	90	90	100	100	82.55
Statements demonstrating that pollution caused by firm's operations will be or has been reduced	10	10	15	15	15	11.73
Disclosing polices of firm's energy	0	0	0	0	0	0
The assessment of Investments to involve such concerns towards the surrounding environment	10	10	10	10	10	8.73
Environmental product-process: The management of waste(s)	15	20	20	30	25	19.45
Eco efficiency	20	20	15	20	30	18.45
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	60	70	60	65	70	56.09
Climate change, carbon sequestration.	10	10	15	15	15	11.7
Products & product development, involving products that assist in protecting the environment.	15	15	20	20	20	16.09
The information of air emission.	10	15	15	15	20	13.09
The information of water discharge.	20	20	30	30	40	25.45
Research conducting on new production approaches that used to reduce the environmental pollution.	0	0	0	0	0	0
The technologies of pollution prevention.	0	0	0	0	0	0
The control of industrial process pollution.	5	5	5	5	5	4.36
The reductions of business operations pollution.	0	0	0	0	0	0
The disposal information of Solid waste(s).	5	5	5	5	10	5.36
Natural resources conservation.	0	0	0	0	0	0
The plant of waste products Recycling.	0	0	0	5	10	3
The plant of effluent treatment installation.	5	5	15	15	20	11.36
The programs of Land forestation and reclamation.	15	10	10	10	15	10.72
The conservation of raw materials.	0	0	0	0	0	0
Total direct and indirect greenhouse gas emissions.	0	0	0	0	0	0
Initiatives to reduce greenhouse gas emissions.	0	0	0	0	0	0
Emissions of ozone-depleting substances by weight.	0	0	0	0	0	0
Undertaking of wildlife conservation.	0	0	0	0	0	0
Noise	5	5	5	5	5	4.36
Environmental Energy: The conservation and the saving of energy.	10	10	10	15	25	12.72
Use/ exploration/ development of new sources, insulation, efficiency etc.	10	5	5	10	10	7.36
Waste materials utilization for energy conservation.	0	0	0	0	0	0
Initiatives to reduce the consumption of energy.	0	5	10	15	15	8.36
The Voicing of firm's concern about the shortage of energy.	5	0	5	10	15	7
Direct use of energy.	5	5	5	5	5	4.36
Indirect use of energy.	10	5	10	10	10	8.36
Energy saving's disclosure caused by product recycling.	0	0	0	0	0	0
Disclosing increased energy efficiency of products.	0	0	0	0	0	0
Receiving awards for the programmes of energy conservation.	0	0	0	0	0	0

Appendix 4: The CED Levels among Sampled Firms in Jordan

Continuation of Appendix 4						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Jordan (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental financial: The discussions of areas with economic/financial impacts.	10	10	10	10	20	10.72
The discussion of economic- environmental interaction.	0	10	0	10	5	3.72
Provisions, contingencies.	35	30	35	60	65	41.18
Environmentally related loans, costs of purchasing, grants and installing new environmentally friendly equipment & machines and consultancy costs & maintenance.	15	10	5	15	25	12.72
Previous & present expenditure for pollution control.	0	0	0	5	5	2
Expenditures estimated in future for pollution control facilities and equipment.	0	0	0	0	0	0
Allocation record of specific fund.	25	25	30	35	35	26.81
Environmental other: Environmental education	10	10	15	20	15	12.72
Training related to environmental management and environmental accounting for employees, accountants and managers.	0	5	5	0	20	5.36
Environmental awards.	20	20	15	20	20	16.45
Environmental research.	5	10	10	10	15	8.72
Partnerships between environmental research institutions and businesses.	20	25	20	25	30	20.81
A moral responsibility enhancement affected by Islamic principles.	0	0	0	0	0	0
Maintenance the balance of environment.	0	0	0	0	0	0
Protect & enhance future generation's well-being.	5	0	5	5	10	5
Designing facilities which are harmonious with the surrounding environment.	0	0	0	0	0	0
Contribution to beautify the environment in terms of art/sculptures or cash.	0	0	0	0	0	0
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	0	0	0	0	0	0
The total level of CED practices	10.27	10.55	11.09	13.45	15.55	12.18

Appendix 5: The CED Levels among Sampled Firms in Kuwait						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Kuwait (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental policy: General statements of "the firm will, or the firm does" nature	100	100	100	100	100	100
Actual statement of policy	100	100	100	100	100	100
Statements demonstrating that pollution caused by firm's operations will be or has been reduced	20	20	25	25	25	23
Disclosing polices of firm's energy	0	0	0	0	0	0
The assessment of Investments to involve such concerns towards the surrounding environment	20	35	40	35	50	36
Environmental product-process: The management of waste(s)	20	15	25	30	35	25
Eco efficiency	10	10	10	10	15	11
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	50	70	60	70	80	66
Climate change, carbon sequestration.	0	5	5	10	10	6
Products & product development, involving products that assist in protecting the environment.	10	15	15	10	10	12
The information of air emission.	5	5	5	10	20	9
The information of water discharge.	5	10	15	20	15	13
Research conducting on new production approaches that used to reduce the environmental pollution.	0	0	0	0	0	0
The technologies of pollution prevention.	5	5	5	5	5	5
The control of industrial process pollution.	0	0	0	0	0	0
The reductions of business operations pollution.	5	5	5	5	5	5
The disposal information of Solid waste(s).	0	0	0	0	0	0
Natural resources conservation.	5	5	5	5	10	6
The plant of waste products Recycling.	5	5	5	15	15	9
The plant of effluent treatment installation.	0	0	0	5	5	2
The programs of Land forestation and reclamation.	10	10	10	10	10	10
The conservation of raw materials.	0	0	0	0	0	0
Total direct and indirect greenhouse gas emissions.	0	0	0	0	0	0
Initiatives to reduce greenhouse gas emissions.	0	0	0	0	0	0
Emissions of ozone-depleting substances by weight.	5	5	10	10	10	8
Undertaking of wildlife conservation.	0	0	0	0	0	0
Noise	0	0	0	0	0	0
Environmental Energy: The conservation and the saving of energy.	25	25	25	40	50	33
Use/ exploration/ development of new sources, insulation, efficiency etc.	5	5	5	5	5	5
Waste materials utilization for energy conservation.	5	5	5	5	5	5
Initiatives to reduce the consumption of energy.	5	5	5	0	5	4
The Voicing of firm's concern about the shortage of energy.	10	10	10	10	10	10
Direct use of energy.	0	0	0	0	0	0
Indirect use of energy.	0	0	0	0	0	0
Energy saving's disclosure caused by product recycling.	0	0	0	0	0	0
Disclosing increased energy efficiency of products.	0	0	0	0	0	0
Receiving awards for the programmes of energy conservation.	0	0	0	0	0	0

Continuation of Appendix 5						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Kuwait (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental financial: The discussions of areas with economic / financial impacts.	0	0	0	0	0	0
The discussion of economic- environmental interaction.	10	10	15	15	20	14
Provisions, contingencies.	70	65	60	80	95	74
Environmentally related loans, costs of purchasing, grants and installing new environmentally friendly equipment & machines and consultancy costs & maintenance.	10	10	10	15	20	13
Previous & present expenditure for pollution control.	0	0	0	0	0	0
Expenditures estimated in future for pollution control facilities and equipment.	0	0	0	0	0	0
Allocation record of specific fund.	25	25	30	35	30	29
Environmental other: Environmental education	20	30	30	40	45	33
Training related to environmental management and environmental accounting for employees, accountants and managers.	15	20	15	25	35	22
Environmental awards.	15	15	20	20	25	19
Environmental research.	0	0	0	0	0	0
Partnerships between environmental research institutions and businesses.	20	20	20	30	25	23
A moral responsibility enhancement affected by Islamic principles.	5	5	5	5	5	5
Maintenance the balance of environment.	0	0	0	0	0	0
Protect & enhance future generation's well-being.	0	0	5	0	5	2
Designing facilities which are harmonious with the surrounding environment.	0	0	0	0	0	0
Contribution to beautify the environment in terms of art/sculptures or cash.	5	5	5	10	10	7
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	0	0	0	0	0	0
The total level of CED practices	11.27	12.27	12.82	14.73	16.55	13.53

Appendix 6: The CED Levels among Sampled Firms in Morocco						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Morocco (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental policy: General statements of "the firm will, or the firm does" nature	75	80	80	85	85	81
Actual statement of policy	30	30	30	35	45	34
Statements demonstrating that pollution caused by firm's operations will be or has been reduced	0	0	5	5	0	2
Disclosing polices of firm's energy	0	0	0	0	0	0
The assessment of Investments to involve such concerns towards the surrounding environment	0	5	5	5	0	3
Environmental product-process: The management of waste(s)	45	45	55	55	55	51
Eco efficiency	5	5	0	0	15	5
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	30	40	50	50	50	44
Climate change, carbon sequestration.	0	0	0	0	0	0
Products & product development, involving products that assist in protecting the environment.	0	0	0	10	5	3
The information of air emission.	10	10	10	15	10	11
The information of water discharge.	15	20	20	30	35	24
Research conducting on new production approaches that used to reduce the environmental pollution.	0	0	0	0	0	0
The technologies of pollution prevention.	5	5	5	5	5	5
The control of industrial process pollution.	20	25	25	30	35	27
The reductions of business operations pollution.	5	10	10	10	10	9
The disposal information of Solid waste(s).	0	0	0	0	0	0
Natural resources conservation.	35	35	35	40	45	38
The plant of waste products Recycling.	5	5	5	5	0	4
The plant of effluent treatment installation.	10	10	10	10	10	10
The programs of Land forestation and reclamation.	5	5	5	10	10	7
The conservation of raw materials.	5	5	5	5	0	4
Total direct and indirect greenhouse gas emissions.	0	0	0	0	0	0
Initiatives to reduce greenhouse gas emissions.	0	0	0	0	0	0
Emissions of ozone-depleting substances by weight.	0	0	0	0	0	0
Undertaking of wildlife conservation.	0	0	0	0	0	0
Noise	0	0	0	0	0	0
Environmental Energy: The conservation and the saving of energy.	30	35	40	45	50	40
Use/ exploration/ development of new sources, insulation, efficiency etc.	30	30	30	30	25	29
Waste materials utilization for energy conservation.	10	10	10	10	10	10
Initiatives to reduce the consumption of energy.	20	20	20	15	20	19
The Voicing of firm's concern about the shortage of energy.	0	0	0	0	0	0
Direct use of energy.	10	10	10	10	10	10
Indirect use of energy.	0	0	0	0	0	0
Energy saving's disclosure caused by product recycling.	10	10	10	10	10	10
Disclosing increased energy efficiency of products.	20	20	20	15	20	19
Receiving awards for the programmes of energy conservation.	0	0	0	0	0	0

Continuation of Appendix 6						
Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in Morocco (%)					
	2010	2011	2012	2013	2014	Mean
Environmental financial: The discussions of areas with economic/financial impacts.	60	55	60	60	55	58
The discussion of economic- environmental interaction.	30	25	25	30	25	27
Provisions, contingencies.	35	35	40	40	35	37
Environmentally related loans, costs of purchasing, grants and installing new environmental friendly equipment & machines and consultancy costs & maintenance.	0	0	0	0	0	0
Previous & present expenditure for pollution control.	0	0	0	0	0	0
Expenditures estimated in future for pollution control facilities and equipment.	0	0	0	0	0	0
Allocation record of specific fund.	5	5	5	15	15	9
Environmental other: Environmental education	0	0	0	0	0	0
Training related to environmental management and environmental accounting for employees, accountants and managers.	0	10	5	5	10	6
Environmental awards.	5	5	5	5	5	5
Environmental research.	5	5	5	10	5	6
Partnerships between environmental research institutions and businesses.	10	10	20	20	20	16
A moral responsibility enhancement affected by Islamic principles.	0	0	0	0	0	0
Maintenance the balance of environment.	0	0	0	0	0	0
Protect & enhance future generation's well-being.	5	15	15	20	35	18
Designing facilities which are harmonious with the surrounding environment.	0	0	0	0	0	0
Contribution to beautify the environment in terms of art/sculptures or cash.	0	0	0	0	0	0
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	0	0	0	0	0	0
The total level of CED practices	10.89	11.66	12.49	14.32	15.73	13.02

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in Oman (%)					
	2010	2011	2012	2013	2014	Mean
Environmental policy: General statements of "the firm will, or the firm does" nature	100	100	100	100	100	100
Actual statement of policy	100	100	100	100	100	100
Statements demonstrating that pollution caused by firm's operations will be or has been reduced	25	20	25	25	25	24
Disclosing polices of firm's energy	5	5	10	10	15	9
The assessment of Investments to involve such concerns towards the surrounding environment	0	5	5	5	5	4
Environmental product-process: The management of waste(s)	50	60	75	75	75	67
Eco efficiency	5	20	20	25	25	19
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	25	25	35	35	35	31
Climate change, carbon sequestration.	0	0	5	5	5	3
Products & product development, involving products that assist in protecting the environment.	20	25	25	25	25	24
The information of air emission.	15	10	20	20	25	18
The information of water discharge.	10	15	10	20	20	15
Research conducting on new production approaches that used to reduce the environmental pollution.	0	0	0	0	0	0
The technologies of pollution prevention.	15	15	15	15	15	15
The control of industrial process pollution.	0	0	5	5	5	3
The reductions of business operations pollution.	0	0	0	0	0	0
The disposal information of Solid waste(s).	0	0	0	0	0	0
Natural resources conservation.	10	10	10	10	10	10
The plant of waste products Recycling.	0	0	0	0	0	0
The plant of effluent treatment installation.	0	0	0	0	0	0
The programs of Land forestation and reclamation.	0	0	0	0	0	0
The conservation of raw materials.	0	0	0	0	0	0
Total direct and indirect greenhouse gas emissions.	0	0	0	0	0	0
Initiatives to reduce greenhouse gas emissions.	0	0	0	0	0	0
Emissions of ozone-depleting substances by weight.	0	0	0	0	0	0
Undertaking of wildlife conservation.	0	0	0	0	0	0
Noise	0	0	0	0	0	0
Environmental Energy: The conservation and the saving of energy.	45	45	45	60	60	51
Use/ exploration/ development of new sources, insulation, efficiency etc.	5	0	5	5	5	4
Waste materials utilization for energy conservation.	0	0	0	0	0	0
Initiatives to reduce the consumption of energy.	0	5	5	5	5	4
The Voicing of firm's concern about the shortage of energy.	0	0	0	0	0	0
Direct use of energy.	0	0	0	0	0	0
Indirect use of energy.	0	0	0	0	0	0
Energy saving's disclosure caused by product recycling.	0	0	0	0	0	0
Disclosing increased energy efficiency of products.	0	0	0	0	0	0
Receiving awards for the programmes of energy conservation.	0	0	0	0	0	0

Appendix 7: The CED Levels among Sampled Firms in Oman

Continuation of Appendix 7						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Oman (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental financial: The discussions of areas with economic / financial impacts.	**0**	**5**	**5**	**10**	**10**	**6**
The discussion of economic- environmental interaction.	**5**	**5**	**5**	**5**	**5**	**5**
Provisions, contingencies.	**35**	**45**	**55**	**75**	**75**	**57**
Environmentally related loans, costs of purchasing, grants and installing new environmental friendly equipment & machines and consultancy costs & maintenance.	**0**	**0**	**0**	**0**	**0**	**0**
Previous & present expenditure for pollution control.	**5**	**5**	**10**	**10**	**10**	**8**
Expenditures estimated in future for pollution control facilities and equipment.	**0**	**0**	**0**	**0**	**0**	**0**
Allocation record of specific fund.	**40**	**45**	**40**	**50**	**50**	**45**
Environmental other: Environmental education	**20**	**20**	**15**	**20**	**25**	**20**
Training related to environmental management and environmental accounting for employees, accountants and managers.	**25**	**30**	**30**	**30**	**30**	**29**
Environmental awards.	**0**	**0**	**5**	**10**	**5**	**4**
Environmental research.	**5**	**5**	**5**	**5**	**5**	**5**
Partnerships between environmental research institutions and businesses.	**10**	**10**	**10**	**15**	**20**	**13**
A moral responsibility enhancement affected by Islamic principles.	**0**	**0**	**0**	**0**	**0**	**0**
Maintenance the balance of environment.	**0**	**0**	**0**	**0**	**0**	**0**
Protect & enhance future generation's well-being.	**20**	**10**	**15**	**15**	**25**	**17**
Designing facilities which are harmonious with the surrounding environment.	**0**	**0**	**0**	**0**	**0**	**0**
Contribution to beautify the environment in terms of art/sculptures or cash.	**0**	**0**	**0**	**0**	**0**	**0**
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	**0**	**0**	**0**	**0**	**0**	**0**
The total level of CED practices	**10.82**	**11.64**	**12.91**	**14.36**	**14.82**	**12.91**

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in Qatar (%)					
	2010	2011	2012	2013	2014	Mean
Environmental policy: General statements of "the firm will, or the firm does" nature	100	100	95	100	100	99
Actual statement of policy	100	100	95	100	100	99
Statements demonstrating that pollution caused by firm's operations will be or has been reduced	20	45	45	55	60	45
Disclosing polices of firm's energy	0	0	0	0	0	0
The assessment of Investments to involve such concerns towards the surrounding environment	10	20	30	30	35	25
Environmental product-process: The management of waste(s)	35	50	40	55	55	47
Eco efficiency	5	10	5	5	5	6
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	50	55	60	60	65	58
Climate change, carbon sequestration.	15	0	10	15	10	10
Products & product development, involving products that assist in protecting the environment.	15	30	25	45	35	30
The information of air emission.	25	25	30	30	30	28
The information of water discharge.	10	5	20	20	20	15
Research conducting on new production approaches that used to reduce the environmental pollution.	0	0	0	0	0	0
The technologies of pollution prevention.	0	0	0	0	0	0
The control of industrial process pollution.	0	0	0	0	0	0
The reductions of business operations pollution.	0	0	0	0	0	0
The disposal information of Solid waste(s).	0	0	0	0	0	0
Natural resources conservation.	0	0	0	0	0	0
The plant of waste products Recycling.	0	0	0	0	0	0
The plant of effluent treatment installation.	0	0	0	0	0	0
The programs of Land forestation and reclamation.	5	0	5	5	5	4
The conservation of raw materials.	0	5	0	5	5	3
Total direct and indirect greenhouse gas emissions.	5	5	0	5	5	4
Initiatives to reduce greenhouse gas emissions.	5	5	0	5	0	3
Emissions of ozone-depleting substances by weight.	0	0	0	0	0	0
Undertaking of wildlife conservation.	0	0	0	0	0	0
Noise	0	0	0	0	0	0
Environmental Energy: The conservation and the saving of energy.	30	25	30	40	45	34
Use/ exploration/ development of new sources, insulation, efficiency etc.	0	5	5	5	5	4
Waste materials utilization for energy conservation.	0	0	0	0	0	0
Initiatives to reduce the consumption of energy.	10	10	10	15	10	11
The Voicing of firm's concern about the shortage of energy.	0	0	0	0	0	0
Direct use of energy.	0	0	0	0	0	0
Indirect use of energy.	0	0	0	0	0	0
Energy saving's disclosure caused by product recycling.	0	0	0	0	0	0
Disclosing increased energy efficiency of products.	0	0	0	0	0	0
Receiving awards for the programmes of energy conservation.	0	0	0	0	0	0

Appendix 8: The CED Levels among Sampled Firms in Qatar

Continuation of Appendix 8						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Qatar (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental financial: The discussions of areas with economic/financial impacts.	15	15	10	20	25	17
The discussion of economic- environmental interaction.	0	0	0	0	0	0
Provisions, contingencies.	55	45	50	60	70	56
Environmentally related loans, costs of purchasing, grants and installing new environmentally friendly equipment & machines and consultancy costs & maintenance.	10	15	10	10	15	12
Previous & present expenditure for pollution control.	0	0	0	0	0	0
Expenditures estimated in future for pollution control facilities and equipment.	0	0	0	0	0	0
Allocation record of specific fund.	30	30	35	35	40	34
Environmental other: Environmental education	35	30	15	40	45	33
Training related to environmental management and environmental accounting for employees, accountants and managers.	20	30	25	35	45	31
Environmental awards.	15	10	0	15	20	12
Environmental research.	5	5	5	5	5	5
Partnerships between environmental research institutions and businesses.	20	15	5	20	35	19
A moral responsibility enhancement affected by Islamic principles.	0	0	0	0	0	0
Maintenance the balance of environment.	0	0	0	0	0	0
Protect & enhance future generation's well-being.	5	0	5	0	10	4
Designing facilities which are harmonious with the surrounding environment.	0	0	0	0	0	0
Contribution to beautify the environment in terms of art/sculptures or cash.	0	0	0	0	0	0
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	0	0	0	0	0	0
The total level of CED practices	11.82	12.54	13.36	15.18	16.36	13.85

Appendix 9: The CED Levels among Sampled Firms in Saudi Arabia						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Saudi Arabia (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental policy: General statements of "the firm will, or the firm does" nature	100	100	100	100	100	100
Actual statement of policy	100	100	100	100	100	100
Statements demonstrating that pollution caused by firm's operations will be or has been reduced	5	10	5	10	5	7
Disclosing polices of firm's energy	0	0	0	0	10	2
The assessment of Investments to involve such concerns towards the surrounding environment	5	5	15	10	5	8
Environmental product-process: The management of waste(s)	5	0	10	10	20	9
Eco efficiency	5	20	20	20	40	21
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	30	45	40	45	60	44
Climate change, carbon sequestration.	0	0	0	0	0	0
Products & product development, involving products that assist in protecting the environment.	10	20	10	15	20	15
The information of air emission.	0	5	10	10	10	7
The information of water discharge.	10	10	20	15	25	16
Research is conducting on new production approaches that used to reduce the environmental pollution.	0	0	0	5	5	2
The technologies of pollution prevention.	5	20	15	20	20	16
The control of industrial process pollution.	5	10	15	5	5	8
The reductions of business operations pollution.	0	0	5	5	5	3
The disposal information of Solid waste(s).	5	5	0	0	5	3
Natural resources conservation.	0	10	10	20	25	13
The plant of waste products Recycling.	0	5	0	5	5	3
The plant of effluent treatment installation.	5	5	0	0	5	3
The programs of Land forestation and reclamation.	0	0	0	0	5	1
The conservation of raw materials.	0	0	0	0	5	1
Total direct and indirect greenhouse gas emissions.	0	0	0	0	0	0
Initiatives to reduce greenhouse gas emissions.	0	10	5	5	5	5
Emissions of ozone-depleting substances by weight.	0	0	0	0	0	0
Undertaking of wildlife conservation.	0	0	0	0	0	0
Noise	0	0	0	0	0	0
Environmental Energy: The conservation and the saving of energy.	30	30	25	30	25	28
Use/ exploration/ development of new sources, insulation, efficiency etc.	0	0	0	5	10	3
Waste materials utilization for energy conservation.	0	0	0	0	0	0
Initiatives to reduce the consumption of energy.	0	0	5	10	5	4
The Voicing of firm's concern about the shortage of energy.	5	5	10	10	20	10
Direct use of energy.	0	0	0	0	15	3
Indirect use of energy.	0	0	0	0	0	0
Energy saving's disclosure caused by product recycling.	0	0	0	0	0	0
Disclosing increased energy efficiency of products.	5	5	0	0	5	3
Receiving awards for the programmes of energy conservation.	0	0	0	0	0	0

Continuation of Appendix 9						
Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in Saudi Arabia (%)					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental financial: The discussions of areas with economic/financial impacts.	15	20	15	35	45	26
The discussion of economic- environmental interaction.	5	5	5	5	20	8
Provisions, contingencies.	55	55	75	90	85	72
Environmentally related loans, costs of purchasing, grants and installing new environmentally friendly equipment & machines and consultancy costs & maintenance.	15	10	10	15	15	13
Previous & present expenditure for pollution control.	10	5	0	5	20	8
Expenditures estimated in future for pollution control facilities and equipment.	0	0	0	0	10	2
Allocation record of specific fund.	10	25	50	45	20	30
Environmental other: Environmental education	10	20	20	35	25	22
Training related to environmental management and environmental accounting for employees, accountants and managers.	45	40	50	50	60	49
Environmental awards.	10	10	25	35	20	20
Environmental research.	0	0	5	0	15	4
Partnerships between environmental research institutions and businesses.	0	5	35	35	30	21
A moral responsibility enhancement affected by Islamic principles.	100	100	100	100	100	100
Maintenance the balance of environment.	0	0	0	0	10	2
Protect & enhance future generation's well-being.	0	5	10	20	25	12
Designing facilities which are harmonious with the surrounding environment.	5	0	0	0	10	3
Contribution to beautify the environment in terms of art/sculptures or cash.	0	0	0	0	5	1
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	0	0	0	0	10	2
The total level of CED practices	**11.09**	**13.09**	**14.91**	**16.82**	**19.82**	**15.15**

Appendix 10: The CED Levels among Sampled Firms in Tunisia						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in Tunisia (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental policy: General statements of "the firm will, or the firm does" nature	85	75	85	95	90	86
Actual statement of policy	0	0	0	0	5	1
Statements demonstrating that pollution caused by firm's operations will be or has been reduced	5	5	10	10	10	8
Disclosing polices of firm's energy	0	0	0	5	5	2
The assessment of Investments to involve such concerns towards the surrounding environment	60	50	60	65	65	60
Environmental product-process: The management of waste(s)	15	15	15	40	40	25
Eco efficiency	5	5	5	5	5	5
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	0	0	0	0	0	0
Climate change, carbon sequestration.	0	0	0	0	0	0
Products & product development, involving products that assist in protecting the environment.	0	0	0	0	0	0
The information of air emission.	0	0	0	0	0	0
The information of water discharge.	5	0	0	5	5	3
Research is conducting on new production approaches that used to reduce the environmental pollution.	10	10	10	20	20	14
The technologies of pollution prevention.	0	0	0	0	0	0
The control of industrial process pollution.	0	0	0	0	0	0
The reductions of business operations pollution.	0	0	0	0	0	0
The disposal information of Solid waste(s).	0	0	0	0	0	0
Natural resources conservation.	5	5	5	5	5	5
The plant of waste products Recycling.	0	0	0	0	0	0
The plant of effluent treatment installation.	0	0	0	0	0	0
The programs of Land forestation and reclamation.	0	0	0	0	0	0
The conservation of raw materials.	0	0	5	0	0	1
Total direct and indirect greenhouse gas emissions.	0	0	0	0	0	0
Initiatives to reduce greenhouse gas emissions.	0	0	0	0	0	0
Emissions of ozone-depleting substances by weight.	0	0	0	0	0	0
Undertaking of wildlife conservation.	0	0	0	0	0	0
Noise	0	0	0	0	0	0
Environmental Energy: The conservation and the saving of energy.	20	20	15	30	35	24
Use/ exploration/ development of new sources, insulation, efficiency etc.	5	5	5	5	5	5
Waste materials utilization for energy conservation.	0	0	0	0	0	0
Initiatives to reduce the consumption of energy.	5	5	5	10	5	6
The Voicing of firm's concern about the shortage of energy.	0	0	0	0	0	0
Direct use of energy.	0	0	0	0	0	0
Indirect use of energy.	0	0	0	0	0	0
Energy saving's disclosure caused by product recycling.	0	0	0	0	0	0
Disclosing increased energy efficiency of products.	0	0	0	0	0	0
Receiving awards for the programmes of energy conservation.	0	0	0	0	0	0

Individual items of corporate environmental disclosure index	Corporate environmental disclosure levels among the sampled firms in Tunisia (%)					
	2010	2011	2012	2013	2014	Mean
Environmental financial: The discussions of areas with economic / financial impacts.	0	0	0	0	0	0
The discussion of economic- environmental interaction.	5	5	5	5	5	5
Provisions, contingencies.	45	40	45	50	50	46
Environmentally related loans, costs of purchasing, grants and installing new environmental friendly equipment & machines and consultancy costs & maintenance.	0	0	0	0	0	0
Previous & present expenditure for pollution control.	0	0	0	0	0	0
Expenditures estimated in future for pollution control facilities and equipment.	0	0	0	0	0	0
Allocation record of specific fund.	30	20	30	30	35	29
Environmental other: Environmental education	0	0	0	0	0	0
Training related to environmental management and environmental accounting for employees, accountants and managers.	0	0	0	0	0	0
Environmental awards.	0	0	0	0	0	0
Environmental research.	0	0	0	0	0	0
Partnerships between environmental research institutions and businesses.	0	0	0	0	0	0
A moral responsibility enhancement affected by Islamic principles.	0	0	0	0	0	0
Maintenance the balance of environment.	0	0	0	0	0	0
Protect & enhance future generation's well-being.	5	5	5	20	20	11
Designing facilities which are harmonious with the surrounding environment.	0	0	0	0	0	0
Contribution to beautify the environment in terms of art/sculptures or cash.	0	0	0	0	0	0
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	5	5	0	0	10	4
The total level of CED practices	5.64	4.90	5.55	7.27	7.55	6.18

Appendix 11: The CED Levels among Sampled Firms in UAE						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in UAE (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental policy: General statements of "the firm will, or the firm does" nature	**100**	**100**	**100**	**100**	**100**	**100**
Actual statement of policy	**100**	**100**	**100**	**100**	**100**	**100**
Statements demonstrating that pollution caused by firm's operations will be or has been reduced	**15**	**20**	**20**	**20**	**20**	**19**
Disclosing polices of firm's energy	**5**	**5**	**5**	**5**	**5**	**5**
The assessment of Investments to involve such concerns towards the surrounding environment	**20**	**15**	**20**	**20**	**20**	**19**
Environmental product-process: The management of waste(s)	**10**	**30**	**25**	**30**	**30**	**25**
Eco efficiency	**5**	**0**	**5**	**5**	**5**	**4**
Emissions- noise & pollution, visual quality, spills, with any efforts to identify, treat or prevent, control and improve.	**70**	**65**	**65**	**75**	**95**	**74**
Climate change, carbon sequestration.	**0**	**0**	**0**	**10**	**10**	**4**
Products & product development, involving products that assist in protecting the environment.	**15**	**5**	**10**	**15**	**15**	**12**
The information of air emission.	**15**	**20**	**15**	**20**	**25**	**19**
The information of water discharge.	**5**	**5**	**15**	**15**	**20**	**12**
Research is conducting on new production approaches that used to reduce the environmental pollution.	**5**	**5**	**5**	**10**	**10**	**7**
The technologies of pollution prevention.	**0**	**0**	**0**	**0**	**0**	**0**
The control of industrial process pollution.	**0**	**0**	**0**	**0**	**0**	**0**
The reductions of business operations pollution.	**0**	**0**	**5**	**5**	**5**	**3**
The disposal information of Solid waste(s).	**0**	**0**	**0**	**0**	**0**	**0**
Natural resources conservation.	**0**	**0**	**0**	**0**	**0**	**0**
The plant of waste products Recycling.	**0**	**0**	**0**	**0**	**0**	**0**
The plant of effluent treatment installation.	**0**	**0**	**0**	**0**	**0**	**0**
The programs of Land forestation and reclamation.	**0**	**5**	**0**	**5**	**5**	**3**
The conservation of raw materials.	**5**	**5**	**5**	**5**	**5**	**5**
Total direct and indirect greenhouse gas emissions.	**0**	**0**	**0**	**0**	**0**	**0**
Initiatives to reduce greenhouse gas emissions.	**10**	**10**	**15**	**20**	**20**	**15**
Emissions of ozone-depleting substances by weight.	**0**	**0**	**0**	**0**	**0**	**0**
Undertaking of wildlife conservation.	**0**	**0**	**0**	**0**	**0**	**0**
Noise	**0**	**0**	**0**	**0**	**0**	**0**
Environmental Energy: The conservation and the saving of energy.	**20**	**30**	**20**	**40**	**40**	**30**
Use/ exploration/ development of new sources, insulation, efficiency etc.	**0**	**0**	**0**	**0**	**0**	**0**
Waste materials utilization for energy conservation.	**0**	**0**	**0**	**0**	**0**	**0**
Initiatives to reduce the consumption of energy.	**0**	**0**	**0**	**0**	**0**	**0**
The Voicing of firm's concern about the shortage of energy.	**0**	**0**	**0**	**0**	**0**	**0**
Direct use of energy.	**0**	**0**	**0**	**0**	**0**	**0**
Indirect use of energy.	**5**	**5**	**0**	**5**	**10**	**5**
Energy saving's disclosure caused by product recycling.	**15**	**15**	**15**	**15**	**15**	**15**
Disclosing increased energy efficiency of products.	**5**	**5**	**5**	**5**	**5**	**5**
Receiving awards for the programmes of energy conservation.	**5**	**5**	**0**	**5**	**5**	**4**

Continuation of Appendix 11						
Individual items of corporate environmental disclosure index	**Corporate environmental disclosure levels among the sampled firms in UAE (%)**					
	2010	**2011**	**2012**	**2013**	**2014**	**Mean**
Environmental financial: The discussions of areas with economic/financial impacts.	10	20	20	25	30	21
The discussion of economic- environmental interaction.	0	0	5	5	5	3
Provisions, contingencies.	40	45	45	55	60	49
Environmentally related loans, costs of purchasing, grants and installing new environmentally friendly equipment & machines and consultancy costs & maintenance.	15	20	10	25	25	19
Previous & present expenditure for pollution control.	0	0	0	0	0	0
Expenditures estimated in future for pollution control facilities and equipment.	0	0	0	0	0	0
Allocation record of specific fund.	40	30	45	35	50	40
Environmental other: Environmental education	15	15	15	20	20	17
Training related to environmental management and environmental accounting for employees, accountants and managers.	15	15	15	15	15	15
Environmental awards.	15	15	15	15	20	16
Environmental research.	0	0	0	0	0	0
Partnerships between environmental research institutions and businesses.	25	30	20	30	35	28
A moral responsibility enhancement affected by Islamic principles.	10	10	10	10	10	10
Maintenance the balance of environment.	0	0	0	0	0	0
Protect & enhance future generation's well-being.	0	0	0	0	0	0
Designing facilities which are harmonious with the surrounding environment.	0	0	0	0	0	0
Contribution to beautify the environment in terms of art/sculptures or cash.	10	10	15	15	15	13
Undertaking the studies of environmental impact to monitor firm's impact on the surrounding environment.	0	0	0	0	0	0
The total level of CED practices	11.36	12	12.09	14.18	15.55	13.04

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