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CORPORATE INTERNET REPORTING, FIRM CHARACTERISTICS, CORPORATE GOVERNANCE, AND FIRM FINANCIAL PERFORMANCE OF SAUDI LISTED COMPANIES

by

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DEDICATION

In memory of my beloved mother (May Allah's mercy be upon her) and my beloved son Mohammed who was looking forward to see the end of our journey and who, so sadly, did not live to see it.
This thesis is dedicated to them.

This thesis is also dedicated
to my husband, Fahad for all his sacrifices and sharing my burdens, to my father, my children: Deema, Farah, Abdullah and Faisal, my sisters, my brothers and my friends for their unconditional love, prayers and support.

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AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Sub-Committee.

Work submitted for this research degree at the Plymouth University has not formed part of any other degree either at Plymouth University or at another establishment.

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ABSTRACT

The increasing use of the internet has created a new opportunity for companies to disseminate different types of information to their current and potential investors via the internet. This type of voluntary disclosure, Corporate Internet Reporting (CIR), can improve the disclosure quality and the transparency to satisfy all users' needs. Furthermore, corporate governance has attracted considerable global attention, especially after the collapses that have occurred in the financial markets. Recently, a growing interest has evolved in exploring corporate governance in emerging markets due to the increased demand for transparency by stakeholders. To provide new insights, this study aims to explore the extent of CIR, examine its relationship with some corporate governance and firm characteristics variables, and to determine the impact of CIR on firm financial performance. These associations are investigated by employing a quantitative method dependant on a multi-theoretical framework. The study uses a self-constructed disclosure index, which includes 196 items, to measure the CIR of 170 Saudi listed companies. The findings indicate that the level of CIR is, on average, moderate compared to their counterparts in developed countries. Further, the empirical results reveal that firms which are large in size, with low liquidity rate, distribute dividends, have board which is meet less frequently and have less independent members in the audit committee are more likely to have high CIR level. In addition, the results indicate that firm growth, leverage, industry type, audit type, board size, board independence, role duality, block holder ownership, directors ownership, institutional ownership, government ownership, audit committee size and audit committee frequency of meeting appear to be insignificant predictors for CIR total. However, the findings show that the significance of these variables varies among the CIR components: content, presentation, timeliness, usability and audit. Finally, it is statistically evident that CIR has no significant impact on firm financial performance in Saudi listed companies. These findings suggest that further effort is required to enhance the awareness of good corporate governance and that other variables may be more relevant to CIR in the Saudi context.

6

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AICPA	The American Institute of Public Certified
AIMR	Association for Investment Management and Research
AIS	Accounting Information System
BRRP	Business Reporting Research Project
CEO	Chief executive officer
CFR	Corporate Financial Reporting
CICA	Canadian Institute of Chartered Accountants
CIR	Corporate Internet Reporting
CMA	Capital Market Authority
DoI	Diffusion of Innovations
ESIS	Electronic Securities and Information System
FASB	Financial Accounting Standards Board
FRS	Financial Reporting Standards
GAAP	Generally Accepted Accounting Principles
GAAS	Generally Accepted Auditing Standards
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
IASC	International Accounting Standards Committee
IFR	Internet financial reporting
IFRS	International Financial Reporting Standards
IT	Information Technology
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares method
OPEC	Organization of the Petroleum Exporting Countries
ROA	Return on assets
ROE	Return on equity
SAA	Saudi Accounting Association
SAMA	Saudi Arabia Monetary Agency
SCGC	The Saudi Corporate Governance Code
SEC	Securities and Exchange Commission
SLC	Saudi listed companies
SOCPA	Saudi Organisation for Certified Public Accountants
SSAP	Statements of Standard Accounting Practice
SSRC	Saudi Shares Registration Company
Tadawul	Saudi stock exchange
TAM	Technology Acceptance Model
VIF	Variance Inflation Factor

CHAPTER 1
INTRODUCTION

1.1 General introduction

The global adoption of the internet and the rapidly extending demands for information from stakeholders drive corporations all over the world to increasingly use corporate internet reporting (CIR) as a means of communicating with both current and prospective users.

The internet provides companies with various opportunities for releasing financial information to their investors and creditors at a low cost. Furthermore, the financial information disclosed via the internet is mostly up to date and is presented in various multimedia formats, making the information easier to use in decision-making (Wagenhofer, 2003). Despite these benefits, internet reporting practices varies in terms of both content and the use of technology across companies and across countries, depending on many environmental influences. These influences affecting CIR include the economy, capital markets, accounting and regulatory framework, enforcement mechanisms, and culture (Haniffa and Cooke, 2002).

In the last two decades, many businesses have collapsed due to financial scandals that have hit the markets, raising doubts about the efficiency of the disclosure and transparency system. This has led to a growing awareness of the need to reform disclosure and transparency practices. One of the important reform procedures is to provide a sound corporate governance structure. However, emerging markets have not been far removed from these reforms, and they have made a noticeable effort to create good corporate governance systems to improve transparency and disclosure practices. Saudi Arabia, as an emerging market, has witnessed a significant improvement in its financial system and accounting standards and practices. The most important actions of improvements were forming the Capital Market Authority (CMA) in 2003 and issuing the Saudi Corporate Governance Code (SCGC) in 2006. Moreover, the Saudi authorities endeavour to reorganise the Saudi stock market (Tadawul) and promote the accounting profession. Considering the rapid growth of internet usage, these developments in the Saudi market have led to a substantial enhancement of disclosure, transparency and corporate governance of Saudi companies. Consequently, this chapter first presents research aims and research objectives, then describes the research questions. Further, it discusses the motivation and importance of the study in the Saudi context, and ends with the structure of the thesis.

1.2 Research aims

The current study mainly aims to examine the corporate internet reporting (CIR) practices, to determine the key factors that influence CIR practices and to assess the impact of CIR and its components on firm financial performance of Saudi listed companies.

1.3 Research objectives

This study seeks to achieve three fundamental objectives:

1. Understanding the actual CIR practices in Saudi listed companies (SLC).

Understanding the actual CIR practices in SLC includes investigating the extent of disclosed information in the websites of the SLC; exploring the content of disclosed information by explaining the various types of information provided on the websites; determining the different presentation tools that are used to distribute information via the companies' websites; assessing the timeliness of disclosed information that make this information useful for all the stakeholders of SLC; exploring the usability of disclosed information on the SLC websites which ease accessing and obtaining information from anywhere; and examining the audit element of disclosed information to ensure the reliability and credibility of the information provided online to the users by SLC.

2. Examining empirically the key factors that may influence CIR (in total and its components) in the Saudi context.

There are many factors that have been evidenced by the literature to have an impact on CIR. The association between these factors and CIR varies considerably depending on the situation and background of the companies. Thus, this study seeks to explore the factors that may affect the CIR practices of SLC. These factors are derived from prior studies and are applied in the Saudi context to explain the use of CIR.

3. Addressing the effects, if any, of CIR (total and its components) on firm financial performance of Saudi listed companies.

This study aims to investigate empirically the economic consequences of CIR, emphasising the importance of adopting internet reporting. This objective is fulfilled by addressing the effects of CIR on firm financial performance in SLC.

Many questions can be derived from these objectives. These questions are demonstrated in the next section.

1.4 Research questions

In this study, three main questions are defined to achieve the objectives. To answer these key questions, each main question has been divided into sub-questions.

These main questions are:

Q1: What is the extent of corporate internet reporting (CIR) through the websites of Saudi listed companies. This question has been divided into the following sub-questions:

1.1 :What is the content level of information that is disclosed by SLC?

1.2 :How is the disclosed information presented on the SLC's websites?

1.3 :Is the disclosed information presented at a time when stakeholders need it?

1.4 :Is it easy to obtain the required information?

1.5 :To what extent is the disclosed information audited?

Q2: What are the significant factors that motivate the decisions regarding the CIR of SLC. This question has been divided into the following sub-questions:

2.1 :What is the extent of the relationship between CIR total and the firm characteristics variables (firm size, firm growth, leverage, liquidity, dividends, industry type and audit type)?

2.2 :Is there any relationship between CIR (content, presentation, timeliness usability and audit) and firm characteristics variables?

2.3 :What is the extent of the relationship, if any, between CIR total and board of directors variables (board size, board independence, board frequency of meeting and role duality)?

2.4 :Is there any relationship between CIR (content, presentation, timeliness usability and audit) and board of directors variables?

2.5 :What is the extent of the relationship, if any, between CIR total and ownership structure variables (block holder ownership, director ownership, institutional ownership, government ownership)?

2.6 :Is there any relationship between CIR (content, presentation, timeliness usability and audit) and ownership structure variables?

2.7 :What is the extent of the relationship, if any, between CIR total and audit committee variables (audit committee size, audit committee frequency of meeting and audit committee independence)?

2.8 :Is there any relationship between CIR (content, presentation, timeliness usability and audit) and audit committee variables?

Q3: Is there any influence of CIR on the firm financial performance of Saudi Arabian listed companies? This question has also been divided into the following sub-questions:

17

3.1 :What is the impact of CIR total on firm financial performance?

3.2 :Is there any influence of CIR (content, presentation, timeliness usability and audit) on firm financial performance?

1.5 Research importance and motivation

The expansion of the internet encourages companies to adopt it as an effective means of disclosing information for the benefit of stakeholders (FASB, 2000). This study aims to examine CIR practice in Saudi Arabia, how corporate governance and firm characteristics affect it, and its impact on firm financial performance for the following reasons.

First, internet reporting has become very important for investors and analysts as a way of obtaining timely information and enhanced disclosure and transparency (Kelton and Yang, 2008). It also helps companies to disseminate additional information in a timely manner, add more flexibility, and reduce disclosure cost. Therefore, it is crucial for Saudi companies to pay more attention to the importance of CIR in providing adequate information to protect their investors and satisfy their needs, which highlights the need for more in-depth academic research regarding CIR in the Saudi context. Second, the financial crises of big companies in developed countries in the last few decades were mainly a result of poor transparency, disclosure practices and corporate governance. Thus, the Sarbanes-Oxley Act stresses the importance of implementing good corporate governance practices which influence CIR practices and result in increasing the disclosure quality and improving the level of information transparency (Sarbanes, 2002). While many studies examine the association between voluntary disclosure and corporate governance, the effect of corporate governance on CIR still needs further examination, especially in developing countries. Third, reviewing the literature shows that most of the studies which investigate CIR and its determinants have been conducted in developed countries, while few studies have been carried out in developing countries. It is expected that the association between voluntary disclosure practices, corporate governance and firm financial performance will vary between developed and developing countries as a result of the variation in the legal system, cultures and the efficiency of the corporate governance system. Thus, it is important to study the effect of corporate governance and firm characteristics on voluntary disclosure in developing countries, especially Saudi Arabia, where studies are limited, to give insight about the impact of corporate governance on CIR.

Fourth, Saudi Arabia is an important emerging market and a G20 country. The Saudi stock market represented 40% of the total Arab market capitalisation and 27% of the total Arab GDP in 2015 (AMF, 2016). Further, it is ranked 39 of the world's 40 best-performing stock markets

and the fourth in the Arab region in 2013 (Bespoke Investment Group, 2013). Also, Saudi Arabia is one of the main oil producers in the Organization of the Petroleum Exporting Countries (OPEC), representing 32% of the total OPEC production in 2015, and it dominates one quarter of the world's oil reserves (SFG, 2016). Although the economic importance of Saudi Arabia and other Gulf countries as the largest oil producers is very significant, research about their financial and commercial situation is very limited (Baydoun et al., 2013).

Moreover, there are many distinctive attributes of Saudi Arabia in terms of regulatory, institutional and social aspects. To be specific, it is an Islamic country and its legal system is based on Islamic law (Hussainey and Al-Nodel, 2008). Thus, Saudi society is greatly affected by Islamic principles and values in all its aspects, including business, economics and law. Corporate operations and financial activities are highly influenced by the adherence to these principles in many forms, such as prohibiting interest as well as Mosharkah and Murabaha transactions, thus attracting greater attention to study CIR and corporate governance practices in Saudi Arabia (Kamla, 2009). Another unique feature of the Saudi context is its culture. Saudi corporations are dominated by strong social norms where informal social relations like tribal, family and personal relationships are very powered (Haniffa and Hudaib, 2007; Hussainey and Al-Nodel, 2008). Further, political connections and government intervention have a noticeable influence on transparency, disclosure and corporate governance practice in the Saudi context. These distinctive and important differences related to the Saudi environment make it very informative to explore CIR and corporate governance practice in Saudi Arabia. Fifth, the Saudi market has witnessed considerable changes that are expected to affect CIR practices among listed companies, starting with the fast growth in the number of listed companies, followed by the issuance of the Code of Corporate Governance and its recent amendments, which make most of its articles mandatory. Subsequent to this is the recent Saudi Arabia Monetary Agency's (SAMA) decision related to the transition to International Financial Reporting Standards (IFRS), which requires all Saudi companies to prepare their financial reports according to IFRSs from the beginning of 2017 (CMA), as well as the new foreign investment regulations. Therefore, it worthwhile examining CIR practices after considering the effects of these changes to gain a complete understanding of the actual situation in the Saudi business environment. Finally, studying the main factors that affect CIR and its economic consequences can be beneficial for several parties. For companies, the empirical conclusions of this study can motivate companies to adopt CIR in order to obtain the anticipated benefits and improve their performance. Furthermore, adopting CIR may encourage more investments and enhance the company's image, which results in lower capital cost, higher value and better competitive

opportunities. For regulators, the study may raise the awareness of the influence of corporate governance and firm characteristics on CIR, which may require changes in regulations to promote transparency and disclosure quality that satisfy the stakeholders' needs. For researchers, highlighting CIR and the key factors that affect its applications in an emerging market, i.e. the Saudi market, may be useful for understanding the CIR practices of other developing countries, particularly the Gulf Cooperation Council countries, which have a similar background, and developing new ideas of future research in this area.

To the best of the researcher's knowledge, no single study comprehensively investigates the impact of corporate governance mechanisms on CIR and its components or the effect of CIR on firm financial performance in the Saudi context. This research hopes to fill this gap by examining the association between corporate governance, firm characteristics and CIR, and the effect of CIR on firm financial performance in the Saudi listed companies.

1.6 Thesis structure

This thesis is organised into nine chapters, as follows:

Chapter One introduces the research aims, objectives and the related questions and discusses the importance and motivation of the study. This chapter concludes with the structure of the thesis.

Chapter Two provides a brief overview of the nature of CIR, its advantages and disadvantages, and the expansion of CIR practices. The development of the accounting profession in Saudi Arabia is demonstrated, which helps to explore the current CIR practices and shed light on the importance of studying CIR and the motivation for using the internet as a disclosure means by Saudi listed companies. Further, this chapter presents the corporate governance definition, objectives, importance and mechanisms, which include the main variables. It also presents a review of the corporate governance framework in Saudi Arabia to give a clear perception of the expected influence of corporate governance on CIR in Saudi Arabia. Moreover, this chapter reviews the previous studies of internet reporting from both developed and developing countries. These studies are categorized into four groups: studies that deal with corporate reporting, studies that describe the actual practice of CIR, studies that examine the association between CIR and firm characteristics, and studies that examine the relationship between CIR and corporate governance variables. This chapter ends with the studies that have been conducted in the Saudi context. Reviewing the existing literature in the CIR field helps to identify the gap that will be filled by this study.

Chapter Three summarises the key theories used in the disclosure literature. This study adopts a multi-theoretical perspective that provides a comprehensive understanding of the relationship between CIR and the explanatory variables. Many approaches are reviewed, namely the economic, political economic, cost-benefit and innovation adoption approach, whereby each approach includes different theories that are employed to justify the hypotheses and interpret the empirical findings. The chapter also discusses the development of the study's hypotheses. This development is based on the theoretical framework and evidence from previous studies. Four main hypotheses are formulated according to the association between CIR and four groups of independent variables. These groups are the firm characteristics variables and three groups related to corporate governance variables, namely board of directors, ownership structure and audit committee. Then, the main hypotheses are divided into several sub-hypotheses to be tested empirically.

Chapter Four demonstrates the methodology used in this study. It discusses various research paradigms, approaches and methods to justify the chosen methodology. The research design is presented in detail to show its compatibility with the research objectives and questions. The chapter also discusses the most appropriate method to measure CIR, the proxies of the independent variables, and the statistical analyses of the data used to test the research model in the study.

Chapter Five aims to achieve the first objective of the study and answer its first question by presenting the actual practices of CIR and its components of the Saudi listed companies. It begins by explaining the reliability and validity of the research instrument used to measure CIR, the disclosure index, then provides a descriptive analysis of the results of the constructed checklist. It reveals the extent of CIR and its components in the Saudi context.

Chapter Six examines the association between CIR and the independent variables. It presents a descriptive analysis of the explanatory variables, followed by a bivariate analysis between the dependent variable CIR and each of the independent variables. Two types of bivariate analysis are used, namely parametric and nonparametric, to support these relationships. Further, a multivariate analysis is performed using the two regression models of un-transformation and log transformation, while the bootstrap model is used to add robustness to the results. The study also employs reduced models as supplementary analyses. Finally, the chapter concludes with a discussion of the obtained results and a hypotheses test. Hence, this chapter answers the second research question regarding the significant factors affecting CIR practice.

Chapter Seven presents the relationship between CIR components and the explanatory variables. The same analyses carried out in chapter eight are performed in this chapter. Explaining such relationships provides a more in-depth understanding and sheds light on the importance of each CIR component.

Chapter Eight illustrates the impact of CIR on firm financial performance in the Saudi context. This chapter starts by reviewing the previous studies related to CIR's economic consequences, followed by the theoretical bases for hypothesis formulation and the employed models used to test the relationship between CIR and firm financial performance. Afterwards, the empirical results of these models are analysed then discussed using both bivariate and multivariate analyses. Thus, the chapter answers the third research question about the influence of CIR on firm financial performance, which may support its adoption by Saudi listed companies.

Chapter Nine is the conclusion of the study. It provides a summary of the study findings. Moreover, it discusses the contributions of the current study, outlines its limitations and, finally, presents recommendations for future studies.

CHAPTER 2
CORPORATE INTERNET REPORTING AND CORPORATE GOVERNANCE: BACKGROUND OVERVIEW AND LITERATURE REVIEW

2.1 Introduction

The internet plays a crucial role in economic development and business growth. It provides a vast quantity of information to a wide range of users in a timely manner. Thus, an increasing number of companies tend to use the internet to disseminate information voluntarily to their stakeholders to benefit from the opportunities offered by the internet (Kamel and Hussein, 2002). Many companies rely entirely on the internet to publish their reports, while others are combining online reporting with hard copy (Line et al., 2002). Moreover, the advanced markets have experienced many collapses, which has explicated the importance of corporate governance that can control performance and balance different users' interests. The transparency of disclosed information is one of the main objectives of corporate governance; hence, distributing information online may help to achieve this goal. As such, it is assumed that implementing corporate governance mechanisms may have an influence on the decision to adopt internet reporting made by Saudi companies. Therefore, this chapter deals with the nature of internet reporting and its present importance, which makes it fruitful area to study. In addition, the nature of corporate governance is discussed in this chapter to demonstrate its importance and to rationalize corporate governance variables that are likely to affect internet reporting. Moreover, the studies that have spotlighted issues and practices related to the recent emergence of internet reporting as well as the determents of CIR will be overviewed in general focusing on the more important factors, namely firm characteristics and corporate governance. This chapter is organised as follows. Section 2.2 presents the concept of internet reporting, its main advantages and disadvantages, the expansion of CIR practices and describes the accounting profession in Saudi Arabia. Section 2.3 discusses the corporate governance system and demonstrates the corporate governance system in Saudi Arabia. Section 2.4 outlines the prior studies that have investigated CIR and the association between CIR and its explanatory variables and finally section 2.5 presents a summary of the chapter.

2.2 Corporate Internet Reporting (CIR)

Disclosure can be defined as "the communication of information by people inside the public firms towards people outside" (Farvaque et al., 2011, p. 8). Companies can communicate required information to all stakeholders through different means, including formal financial reporting, press releases, conferences and websites. Hence, the dynamic nature of the business environment, which has many challenges and opportunities (Elliott, 2002), encourages companies to adopt the internet as a tool to disclose information to their stakeholders. Recently, it is claimed that a considerable number of companies adopt technologies combined with more complex internet use in their websites (Fisher and Naylor, 2016). Corporate internet reporting (CIR) is considered a type of voluntary disclosure that is described as "disclosure, primarily outside the financial statements, that is not explicitly required by GAAP or an SEC rule" (FASB, 2001, p.5). Thus, corporate internet reporting can be defined as a voluntary disclosure tool that enables companies to disclose all or a proportion of its financial and non-financial information on the internet, presented in multiple formats and languages by using the most advanced and interactive electronic features to facilitate the communication through and usage of the website (Arafa, 2012).

2.2.1 The nature of corporate internet reporting

Given the companies' willingness to fulfil the needs of stakeholders for accurate information in a timely basis, CIR demands a continuous updating of information disclosed online. The internet has many distinctive features that make it more relevant to CIR. One of the most interesting features is the flexibility of presentation, whereby companies can customise their reports and produce them in multiple formats and languages depending on the users' needs. Dull et al. (2003) conclude that presentation format has a considerable effect on internet disclosure for some companies, particularly those of smaller size. In addition, the dynamic and interactive features of internet permit direct communication, such as mailing lists and online participation, which enable companies to rapidly update and thus increase the usefulness of information disclosed online (Khadaroo, 2005). Further, because internet disclosure is voluntary, companies can use the internet to provide various types of reports at low costs with no conclusive content and under no regulations (Debreceny et al., 2002). Moreover, Xiao et al.

(2002) state that the internet has a great impact on communicating corporate reporting because of its distinctive features, such as incorporating advanced multimedia and other technologies that enhance accessibility, distribution and presentation. The use of the internet enables a worldwide dissemination of corporate information and increases the number of potential users as the internet is not restricted to national boundaries (Debreceny et al., 2002). Besides, Using the internet promote the ability to compare and analyse data in an efficient way (Omran and Ramdhony, 2016). These unique features of the internet imply substantial effects that benefit both companies and stakeholders. The expected advantages and disadvantages of disclosing information on the internet are discussed in the following sections.

2.2.2 Advantages and disadvantages of adopting internet reporting

There are many advantages stemming from disclosing information via the internet. First, it reduces the cost and time of disseminating information; when stakeholders use the internet to obtain required information, the cost of printing and distributing annual and interim reports can be avoided (FASB, 2000) and the time associated with this is saved, increasing the timeliness and thus the usefulness of the disclosed information (Shepherd et al., 2001). Second, internet reporting makes the information available to a wider range of users with unrestricted access, which increases stocks liquidity and decreases capital cost (Ashbaugh et al., 1999). Third, the internet facilitates accessing to the required information anywhere and at any time (Xiao et al., 2004). Fourth, companies can provide various types of reports in different dynamic forms, such as weekly or monthly reports, and use graphics or even audio or video to improve the presentation of performance information and help in evaluating their financial position (FASB, 2000); and finally, the internet enables the easy searching for and downloading of information (Fisher et al., 2004). However, adopting internet reporting has some disadvantages. First, internet reporting may lack reliability as the company can publish unaudited financial reports on its website or provide links to unaudited information (Ashbaugh et al., 1999). Second, internet reporting may create additional costs such as the cost of preparing financial reports and the litigation cost that occur when investor rely on unaudited financial information in their decisions (Mokhtar, 2017). Third, poor web security can add greater risk to internet reporting; hackers may fraudulently alter reliable financial information if web security is inadequate (Aly, 2008). Fourth, another risk is represented by the links provided on the website, since users may assume that all linked information is as accurate and reliable as that on the company's website.

Finally, users may become lost whilst using the navigation tools, such as the forward and back buttons, which may harm the integrity of financial reports (ibid).

Nevertheless, as the advantages of adopting internet reporting overweigh the disadvantages, the online disclosure of information internet reporting has become increasingly important and popular over the years. The next section discusses this in detail.

2.2.3 Expansion of CIR practices

The rapid development of the business environment encourages companies to expand their internet usage. Many studies have been conducted to illustrate the impact of the expansion of internet usage on corporate reporting. Asmoro (2018) stated that many Indonesian companies that used to rely on paper-based reports, now shift to web-based reports. Deller et al. (1999) investigated the use of the internet for the purpose of investor relations in the US, UK and Germany. They found that internet investor relations in the US are more advanced than in the UK and Germany. Although the internet opportunities were only partially exploited in the US at that time, American companies were the world leaders in this field. Further, Elliott (1992,1994) reports that information technology affects business and leads to many changes in external accounting, whereby more frequent reports can be produced and there is more disclosure of non-financial information. Gray and Debreceny (1997) state that 69% of US industrial companies publish their annual reports online. They illustrate that these companies endeavour to convert these reports from hard copy to soft copy on the internet, and that these contain complete web-documents. Similarly, Ashbaugh et al. (1999) indicate that 70% of large American companies disclose financial information online although it is not compulsory under US security regulations. They claim that poor security and being unaudited make internet reporting practices unreliable. Moreover, Xiao et al. (2005) assert that companies are required to disclose more non-financial information in their reports and should have real-time financial reporting. Realizing the importance of internet for corporate reporting, many researchers believe that hard copy reports will eventually be overtaken by web-based reports in most companies. For example, Oyelere et al. (2003) predict that companies will soon depend on the internet as the main disclosure tool and that paper-based reports will no longer be produced. Accordingly, many professional bodies (CICA, IASC, AICPA, FASB) are investigating the current practices of internet reporting and the inclusions of technology for corporate reporting in the future. The report of the Canadian Institute of Chartered Accountants (CICA) identifies the present practices and the expected future of internet reporting. It recommends generating

special reports that implement new regulations and focus on different users' needs beyond traditional financial reports and principles (CICA, 1999). Also, the International Accounting Standard Committee (IASC) (1999) suggests that corporate reporting, in the near future, will employ the internet as its main dissemination channel and use paper-based reports as a minor channel. Meanwhile, a study by the Financial Accounting Standards Board (FASB) discusses the electronic distribution of information and the effect of the internet on corporate reporting (FASB, 2000), and a report of the American Institute of Public Certified Accountants (AICPA) indicates that the accounting profession should carefully consider theories and means that could improve corporate reporting (Jenkins report) (AICPA, 1994). Further, other regulatory bodies attach great importance to the relevance and usefulness of online disclosure, especially after recent scandals and the failure of some leading businesses (e. g., Enron). For example, the Sarbanes-Oxley Act (Sarbanes, 2002) requires certain procedures that enhance reporting practices, and Regulation FD, issued in 2002 by the SEC, asserts the benefits of real-time reporting and prompts companies to adopt internet reporting (SEC Release No. 33-7881). These regulations encourage the use of corporate websites as a main channel of disclosing information to all users and reinforce the importance of internet reporting. Moreover, the dynamic changes in the business environment and the increased level of transparency required by stakeholders raise questionability about the adequacy of traditional financial reporting in satisfying the different needs of stakeholders (Lev, 2000). Hence, based on the distinctive features of the internet, these changes have resulted in significant changes in disclosure quality on company website and improved communication ways with stakeholders via the internet (Marston and Polei, 2004;). Likewise, in the Saudi context, many changes have taken place to develop the accounting profession and disclosure practices. The development of the accounting profession is demonstrated in the next section.

2.2.4 The accounting profession in Saudi Arabia

It is important to discuss the development of the accounting profession as this helps to determine the level of requirements for and demands on disclosure and transparency as well as explore the actual practice of CIR. Shinawi and Crum (1971) state that the accounting profession did not exist in Saudi Arabia until the early 1970s, and that the accounting practices were derived from other countries, such as the UK, Egypt and Sudan. However, the Income

Tax and Zakat [1]Law, which was issued in 1950, is considered a critical cornerstone in the development of the accounting profession in Saudi Arabia. This law demands that all individuals and companies maintain precise accounting records demonstrating their capital, income and expenses during the year in order to assess the tax or Zakat (Al-Mulhem, 1997). the Department of Zakat and Income Tax declares that financial statements prepared according to internationally accepted practices is acceptable when assessing income tax, although the international approach to be applied is not specified. As such, some Saudi companies use the standards of the International Accounting Standard Committee; others refer to the Generally Accepted Accounting Principles (GAAP) and a few use Canadian Standards (Merei, 1985)

The Ministry of Commerce is regarded as one of the most important official bodies affecting the accounting profession. It has been responsible for regulating, implementing and governing the rules for all companies working in the Saudi market. In 1965, the Ministry of Commerce released the Companies Act, which is considered the primary official guideline for accounting practice. The Act includes 234 articles and deals mainly with the regulations for different types of commercial companies, the required annual financial statements, the

appointment of the auditor and his role, and penalties for violation (Al-Harkan, 2005; Alshehri, 2012). However, the Company Act gives no definition of the concepts and objectives regarding the accounting information, neither does it mention accounting and auditing standards (Al-Amari, 1989).

The Accountants Law is another regulation issued by the Ministry of Commerce in 1974 (entirely amended in 1992). This law established the Supreme Committee for Professional Accountants to supervise accountants and auditors. It contains 38 articles that include the basic requirements for practicing the accounting profession, such as registration conditions and procedures, the responsibilities of accountants, violation penalties, and the establishment and regulations of the Saudi Organisation for Certified Public Accountants. These laws were the only existing legal sources for accountants and companies until 1986. Thus, they demonstrated insufficient support for the accounting profession, which can be noticed in the differences between companies in reporting Zakat and income tax and in their annual reports. In 1981, the accounting department of King Saud University formed the Saudi Accounting Association (SAA). This association aims to publish academic resources, provide training opportunities and promote accounting studies. In addition, the SAA issues the Accounting Research Journal,

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[1] Zakat is "one of the five Islamic Principles. It is a religious tax levied on capital and earnings. The fixed rate of Zakat is 2.5 %". (Al-Mulhem, 1997, p.138).

which is a peer-review journal that contributes to the development of the accounting profession (Al-Angari, 1999; Al-Eissa, 2009).

Until 1983, there was no formal stock market in SA. The first step to regulate the stock market was in 1984, when a ministerial committee, as a division within the Banking Control Department of the Saudi Arabian Monetary Agency (SAMA), was formed and took on the responsibilities of stock trading. In 1985, the government established the Saudi Shares Registration Company (SSRC), whereby its shareholding is limited to banks (Tadawul official site). Another leading development in the stock market was the foundation of the Electronic Securities and Information System (ESIS) in 1990, which was the first automated system for share-trading in SA. In 2001, ESIS was substituted by a more advanced electronic trading system, Tadawul, which facilitated share trading via the internet. This new system was able to deal with a large volume of transactions and promote market liquidity due to its ease of use, transparency and high-speed processing (ibid). SAMA was the only official body that regulated and supervised the stock market until the formation of the Capital Market Authority (CMA) in 2003 by the Saudi Capital Market Law, as the sole authorized body to regulate and monitor the Saudi stock exchange. This organization has a full legal, administrative and financial independence to ensure objectivity and fairness in conducting its duties (Al-Harkan, 2005). The main objectives of the CMA include issuing rules and regulations related to the implementation of the Capital Market Law provisions and investor protection, enhancing transparency and disclosure standards in listed companies, and monitoring stocks issues to ensure the full disclosure of any related information. In 2007, the Saudi Stock Exchange Company (Tadawul) was established as a joint stock company responsible for all exchange activities. Currently, the Saudi stock market is the largest exchange in the Arab region (see Figure 2-1), with 175 listed companies distributed across 20 sectors and the market capitalization that expanded remarkably from SR 274,530 million in 2001 to reach SR 1,681,950 million by the end of 2016 (Tadawul official site). However, the Saudi stock market suffers from two major problems: insider trading, which depends on sensitive information not available to the public, and information leakage through informal channels (Al-Razeen,1999). The development of the Saudi stock market, the provisions of the Accountants Law and the endeavours of the SAA have led to a rapid evolution in accounting practice represented by the issuance of the concepts and objectives of financial accounting, the general presentation and disclosure standards, and the establishment of the Saudi Organisation for Certified Public Accountants (SOCPA).

In 1980, the Ministry of Commerce assigned the Al-Rashed office (CPA firm) to prepare a proposal to develop the profession, taking into account the special requirements of the Saudi

Figure 2.1: Market Weights in the AMF Index, Fourth Quarter 2016
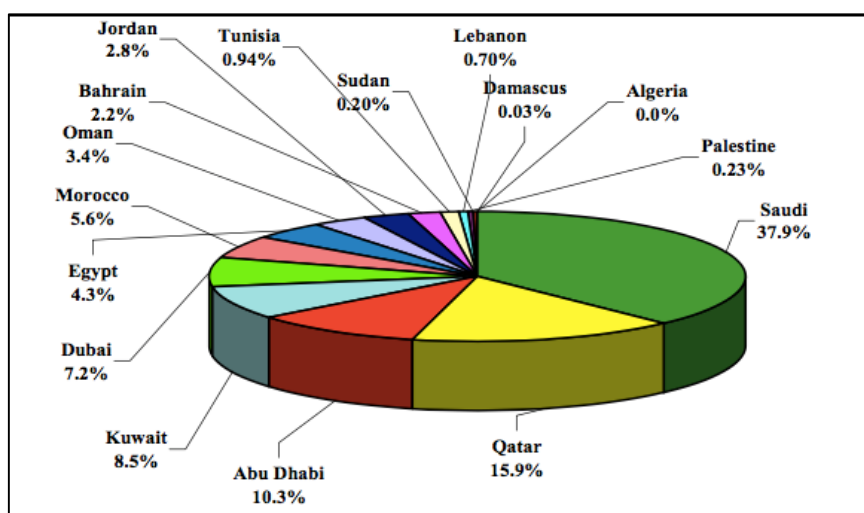
Source: (Arab Capital Markets, 4th Quarter Bulletin 2016, Arab Monetary Fund)

environment. The recommendations of this study, which are *Accounting, Objectives and Concepts, and General Standard of Presentation and Disclosure* and *Auditing Standards*, were approved by the ministry in 1986 and became the official guide for accounting professionals and practitioners. By 1990, all companies were mandated to comply with these standards when preparing their annual reports. The most significant progress in the accounting profession in Saudi Arabia was the formation of the Saudi Organisation for Certified Public Accountants (SOCPA) in 1992. The SOCPA is chaired by the Minister of Commerce and operates to promote the accounting and auditing profession and enhance its status. The main objectives of the SOCPA are to develop and issue accounting and auditing standards and to supervise the auditing profession by reviewing audit firms' performance using quality control programs, holding CPA exams, organizing continuous professional education, and conducting research and studies related to the profession (SOCPA official site).

Accordingly, it can be stated that the government has made a considerable effort to develop the accounting profession and to enhance the quality of disclosure and transparency in particular. Indeed, to preserve high-quality disclosure and transparency, it is essential to have good corporate governance systems that are able to protect the interests of all stakeholders. Thus, the corporate governance system is illustrated in the following section.

2.3 Corporate governance

Corporate governance is a vital issue that is extensively considered by regulators and capital market participants. Corporate governance has been used since companies developed their current form (Cadbury, 2002) and, as stated by the Blue Ribbon Committee (1999), there have been many debates on the concept of corporate governance over the past three decades. Yet, many problems have been occurred in accounting, auditing and corporate governance that have weakened the quality and integrity of financial reporting and have caused the collapse of many businesses, such as the scandals of Maxwell, Enron, WorldCom and the Bank of Credit and Commerce. This situation proves the serious need for a sound corporate governance system as a tool that organizes the relationship between shareholders and management and prevents such problems from reoccurring.

2.3.1 Corporate governance definition

The term corporate governance has no generally accepted definition. Nevertheless, it can be perceived from a narrow or broad perspective, depending on the viewpoint of the policy maker, professional, researcher or theorist (Solomon, 2010). The narrow approach focuses on the interests of shareholders, which is asserted in agency theory. It simply views that the demand for corporate governance mechanisms is derived from the segregation between managers and shareholders (Gillan, 2006). Thus, the Cadbury Report defines corporate governance as "the system by which companies are directed and controlled" (Cadbury, 2000, P.1). Moreover, Parkinson (1994) states that the role of corporate governance is to ensure that managers behave in favour of the interests of shareholders. Also, Ng and Koh (1994), Shleifer and Vishny (1997) and Monks and Minow (2004) embrace the same approach and concentrate only on shareholders' interests. However, the broad perspective takes into account all stakeholders, such as shareholders, customers and suppliers. That is, the broader definition, conforming with stakeholder theory, considers corporate governance to concern all parties and be responsible to the whole of society. Among these definitions, Gillan and Starks (1998, P. 4) state that corporate governance is "the system of laws, rules and factors that control operations at a company". Further, Donnelly and Mulcahly (2008, P. 416) define corporate governance as "a set of control mechanisms that is specially designed to monitor and ratify managerial decisions, and to ensure the efficient operation of a corporation on behalf of its stakeholders." Solomon (2010, P. 6) defines corporate governance as "... the system of checks and balances, both internal and external to companies, which ensures that companies discharge their

accountability to all their stakeholders and act in a socially responsible way in all areas of their business activity ".

Overall, all these definitions, whether the company is accountable towards narrow or broad parties, maintain a central point, which is the structure of corporate governance that forms to manage and control company activities and strategies. In line with this, the Organization for Economic Co-operation and Development (OECD) definition asserts that corporate governance is "a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined. Good corporate governance should provide proper incentives for the board and management to pursue objectives that are in the interests of the company and its shareholders and should facilitate effective monitoring" (OECD, 2004, P. 11).

2.3.2 The objectives of corporate governance

Many objectives can be accomplished by applying an effective corporate governance structure. Initially, effective corporate governance is able to enhance monitoring quality and controlling management actions and performance; thus, it is considered mechanism of accountability (Cerbioni and Parbonetti, 2007). Further, because of the separation between owners and managers and the need to balance the interests of all parties inside and outside the company, efficient corporate governance seeks to alleviate conflicts of interest between shareholders, directors, managers and other stakeholders (Monks and Minow, 2004). Other objectives of corporate governance are to reduce information asymmetry, which improves a corporation's transparency (Hidalgo et al., 2011), and to select committees that protect shareholders' welfares and increase their wealth. In 1999, the OECD issued the principles of corporate governance, which are considered as the benchmark for best practice. These principles were revised in 2004 and adjusted according to the recent changes and developments in business. The main subjects of the OECD principles are reinforcement of the bases for an efficient corporate governance structure; shareholders' rights and main ownership functions; fair treatment of shareholders; stakeholders' role in corporate government; disclosure and transparency; and the responsibilities of the boards of directors (OECD, 2004).

2.3.3 The importance of corporate governance

In the last few years, corporate governance has gained more attention as one of the most broadly debated issues in both academic and business settings. The importance of corporate governance has emerged from scandals and financial setbacks where evidence of improper corporate governance has appeared. The collapses in international business have impaired the confidence of investors in capital markets and have exposed the need for substantial improvements in the corporate governance system (Rawy, 2004). Further, implementing a sound corporate governance structure can improve confidence in corporate reporting as a tool for distributing information. Moreover, the Sarbanes-Oxley Act (Sarbanes, 2002) recommends that corporate governance should influence shareholders' views of the information content of accounting earnings, and the UK Corporate Governance Combined Code (2003) stresses the impact of corporate governance mechanisms on improving the quality of accounting information. Therefore, corporate governance is important for many reasons, namely there is no definite framework to ensure that directors' behaviour is regulated; the absence of firm accounting standards; the failure of financial reports to meet the needs of all users; the inadequate role of independent auditors; the diffusion of shareholders beyond geographical boundaries (Macdonald and Beattie, 1993; Demirag and Solomon, 2003); the vital effect of corporate governance on attracting foreign investments (Almajid, 2008); and finally, the existence of sound corporate governance structures is significantly enhanced employees' welfare, improves transparency and ensure better disclosure quality (Zhong et al., 2017).

Based on the importance of corporate governance structure, numerous studies have investigated the association between the quality of corporate governance, disclosure decisions and other aspects of the corporate. The following section deals with the main variables of corporate governance that are expected to have a considerable influence.

2.3.4 Corporate governance mechanisms

Empirically, it is generally accepted that governance mechanisms have a great impact on enhancing different aspects of companies. Many studies have been conducted recently, mostly in developed countries, to examine the role of corporate governance in improving companies' performance and encouraging responsible behaviour. Thus, many corporate governance variables can be deduced from these previous studies that can help study the impact of these variables on internet reporting. Cohen et al. (2002, P.587) state that "...one of the most

important functions that corporate governance can play is in ensuring the quality of the financial reporting process". In the current corporate environment, good corporate governance mechanisms include a thoughtfully composed board of directors, a balanced ownership structure and an adequate audit committee (Habbash, 2010). The board of directors is one of the most commonly researched governance mechanisms in the governance literature (Dalton et al., 1998). Usually, the board of directors is nominated directly by shareholders and, thus, should act in a way that maximizes their shareholder interests. It serves as a link between owners (shareholders) and agents (managers). The board of directors can be composed of different types of directors: inside directors (executive director) and outside directors (non-executive director or independent director). The main role of the board is to monitor and control the performance of managers (Cadbury, 1992) to ensure that they behave in their shareholders' best interests. Many variables are related to the mechanism of the board of directors, among these are size, independence, board duality, family members on the board, foreign members on the board and the frequency of board meetings. The other effective factor of corporate governance is ownership structure. The structure, concentration and identity of ownership are all important to ensure that managers are adequately monitored and controlled. It is assumed that ownership structure varies depending on the legal, regulatory environment and other country-related factors. The problem of ownership structure may be attributed to the agency problem in two different forms. First, if ownership is dispersed among many shareholders, the interests of managers may not correspond to those of shareholders. Second, if ownership is concentrated among a few people or families, this may affect management and harm minority rights (Alshehri, 2012). As such, protecting shareholders' rights, which is determined by the legal system, is a critical issue in discussing ownership structure. Mallin (2007) states that the legal systems in developed countries ensure a fundamental protection for minority shareholders, thus the ownership become more diversified. The ownership structure can be classified into different forms: family or individual ownership; institutional; managerial; governmental and foreign ownership. Moreover, an active audit committee is an essential mechanism of effective corporate governance. The role of the audit committee is to ensure the precision of the financial reports (Buchalter and Yokomoto, 2003) and to provide the necessary monitoring to protect investor interests and enhance confidence in stock markets. The audit committee acts as a communication channel between the board, the internal monitoring system and the external auditor (Habbash, 2010). The main characteristics of an audit committee are size, meeting frequency, independence, and expertise. Consequently, in the current study,

board of directors, ownership and audit committee are investigated to assess their association with CIR.

2.3.5 Corporate governance in Saudi Arabia

Corporate governance improvements are an important part of Saudi economic developments. These improvements concur with the increasing concerns for corporate governance resulting from the collapses in both developed and developing countries (e.g., Barings Bank, Enron and WorldCom and the 1997/1998 Asian economic crisis). However, the current practice of Saudi companies is still beyond the practices of developed countries (Hussainey and Al-Nodel, 2008). Saudi society is mainly characterised by the role of family and personal relationships over regulations, privilege afforded to particular individuals over tasks, and the presence of a high level of secrecy. It is noticeable that many Saudi companies are dominated by family business and that the government is highly involved in the private sector (Al-Amari, 1989; Al-Rumaihi, 1997; Al-Nodel, 2004). Until the early 2000s, less attention was paid to corporate governance. The Company Act of 1965 was, until 2006, the main source to regulate and govern companies' performance in Saudi Arabia (Haniffa and Hudaib, 2007). It determines the legal framework for business and stipulates the distribution of annual financial statements audited by an independent licensed auditor (Al-Rehaily, 1992; Al-Nodel, 2004). A critical limitation of this Act is that it does not directly mention corporate governance mechanisms expect for a few provisions about board characteristics and shareholders' general assembly. Further, issues related to transparency, disclosure, accountability and shareholders' protection are not addressed by this Act. Because there was no supervisory body, SAMA was responsible for regulating and controlling stock market transactions from 1985 until 2003, when the CMA was founded and took the responsibility of monitoring corporate governance practices and regulating the stock market (Tadawul, 2014). Consequently, there was a strong demand for developing the Saudi stock market and establishing an accurate corporate governance system. These demands included strengthening the financial market (e.g., by increasing the number of listed companies and permitting foreign investor participation); enhancing disclosure and transparency; providing corporate governance rules to protect shareholders' rights; and improving external corporate governance mechanisms (Alshehri and Solomon, 2012). A limited number of studies have been conducted to discuss issues related to corporate governance and its mechanisms in Saudi Arabia (e.g. Al-Harkan, 2005; Al-Ajlan, 2005; Al–Twaijry et al., 2002; Falgi, 2009; Alshehri, 2012). Furthermore, some international bodies (e.g., the World Bank, the International Monetary Fund and the OECD) suggested that developing

countries, and Saudi Arabia in particular, should pay more attention to improving corporate governance practices and introduce a code of good corporate governance (Clarke, 2004; Albassam, 2014). Although the corporate governance restructuring commenced in 2003 with the foundation of CMA, it was not formally established until the introduction of the Saudi Corporate Governance Code (SCGC) in 2006 (Hussainey and Al-Nodel, 2008; Al-Moataz and Hussainey, 2012). In February 2006, the stock market suffered from sharp decline resulting in a loss of about 53% of its market value. The index dropped from approximately 20,600 in February 2006 to 7,900 in December 2006 (Tadawul, 2007). This dramatic crash highlighted the need to take remedial action to enhance corporate governance regulations and mechanisms (Alkhaldi, 2015). As an immediate response to the market crash, the CMA issued the SCGC in November 2006 to ensure fairness and confidence in the Saudi market, improve corporate governance practices and protect investors effectively. Saudi Arabia was the second country to implement corporate governance for the listed companies in the GCC countries after Oman (Buallay et al., 2017).The code is mainly derived from the 1992 UK Cadbury Report (Al-Abbas, 2009). It aims to provide a guideline and does not stipulate mandatory provisions [2] of best governance practices that listed companies should follow. However, listed companies should report to CMA regarding their compliance with the provisions of the SCGC and the reasons for incompliance. The SCGC covers many corporate governance topics, including shareholders' rights and the general assembly; disclosure and transparency; board of directors; internal controls; and risk management (CMA, 2012). Moreover, other regulations, such as the Market Law and Listing Rules, were released in 2004 and implemented by the CMA to reform corporate governance practices.

2.4 Literature review of internet reporting

In the light of the recent innovations in technology and the new network communication emergence, changes are required of accounting – both internal and external reporting – to counter the new stream of demands on business decision-making. In this developing era of information, the conventional communication system based on printed reports has become less efficient to satisfy users' needs due to its relative lack of timeliness, accessibility, interactivity

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[2] In February 2017, an amended SCGC was issued. It contains new topics such as company committees, the company's external auditor, professional and ethical standards. Also, it states that these regulations are mandatory except the provisions that contain a reference to being guiding (CMA, 2017).

or sufficient detail (Lodhia et al., 2004). Consequently, many companies have shifted to the internet to disseminate their corporate information on the companies' websites in order to be in line with the new requirements of today's corporate environment. Coincidentally, regulatory bodies have made remarkable endeavours to improve reporting quality by encouraging, and in some cases requiring, companies to use the internet as a prime tool for information dissemination. On January 31, 2000 (updated on May 21, 2002) the Financial Accounting Standards Board (FASB) released the first published section of its Business Reporting Research Project (BRRP) entitled, *Electronic Distribution of Business Reporting Information*. In this project, two separate studies were conducted to determine the kind of business information that corporations are reporting outside of financial statements. The first one explores the electronic delivering of business reports and highlights the expected promise opportunities and problems associated with the use of internet and technology in business reporting. The second one investigates the reporting requirements of the SEC and the FASB and suggests way of terminating any duplication or overlap.

The growth of concerns regarding the use of the internet as a medium for distribution business reporting information has modified the process of information flows from companies to investors, creditors and other stakeholders. Furthermore, it is believed that this process is influenced by many factors, both inside and outside corporations (see figure 2-2). As a consequence of this evolution in corporate reporting, the present study is an attempt to extend the in-depth understanding of the new corporate reporting environment created by the internet in Saudi Arabia in particular and to examine some of the drivers and underlying factors related to this form of reporting. Since disclosure is an "accounting activity involving both human and nonhuman resources or techniques as well as the interaction between the two" (Perera, 1994; p. 268), it is vital for research in this area to point out this important issue. Hence, incorporating corporate governance variables that address the human aspect in disclosure practice may provide better explanations of the extent of corporate reporting practice using the internet. Underlining this view, Choi and Levich (1990) and Adhikari and Tondkar (1992) aver that disclosure practice diversity does not evolve in a vacuum, but rather reflects the fundamental environmental factors' influences, such as the behavioural, economic, and cultural factors that affect companies' practices in different countries. While economic aspects have been extensively researched, there is a strong argument for more empirical research into the social and behavioural implications of information technology in relation to corporate disclosure. Thus, this research will concentrate on corporate governance as the main human factor affecting internet reporting.

This section overviews those studies that have spotlighted issues and practices related to the recent emergence of internet reporting as well as the determents of CIR in general focusing on the more important factors, namely firm characteristics and corporate governance. Three areas will be considered, namely CIR practice, CIR determinants, and CIR in Saudi Arabia and its gaps. Considering the clear relevance of internet reporting to corporate reporting, a review of previous studies related to corporate reporting will be discussed first in the next sub-section.

Figure 2.2:   The Evolution of Accounting and Reporting Practices
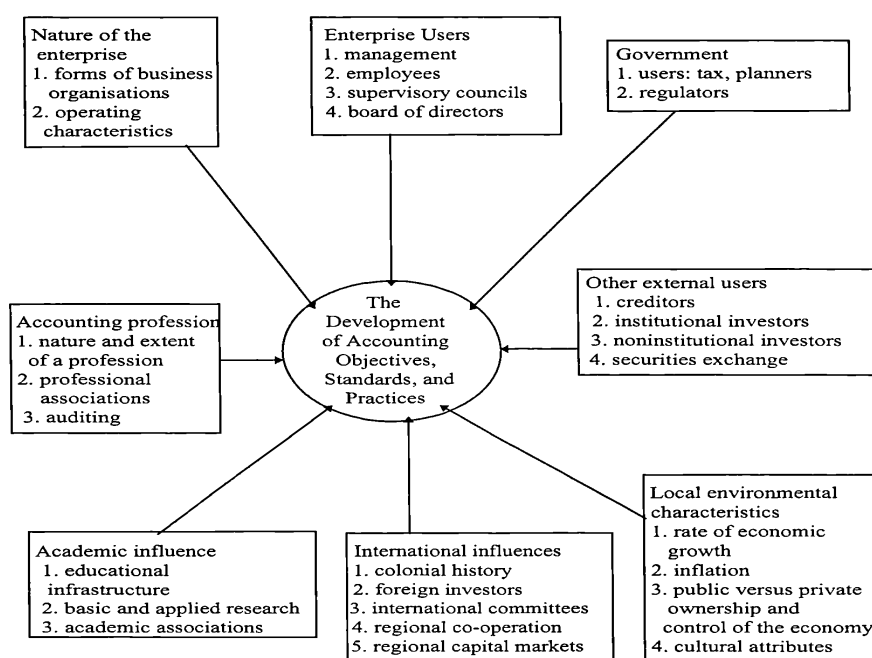
2.4.1 Corporate Reporting

Corporate reporting is one of the most interesting accounting research areas. Corporate reporting can be defined as "the process by which accounting measurements are communicated to their intended users" (Choi and Meek, 2008). The disclosure of financial information has gained considerable attention among many countries and international bodies around the entire world. The accounting and disclosure requirements of the UK SSAP and FRS, the US GAAP and SEC, the IASC, and Companies Acts in different countries are significant signs of the growing importance of financial disclosure. Adequate disclosure of financial information through corporate reports is of high priority to enhance different users' abilities to make

decisions about investing their resources in an efficient way. The Financial Accounting Standards Board (FASB) in its Conceptual Framework for Financial Reporting declares that the main objective of financial reporting is "*to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling, or holding equity and debt instruments and providing or settling loans and other forms of credit.*" (FASB, 2010). Thus, it is asserted that corporate reports should include all elements that are relevant and material to the decision-making process of the above-mentioned different users. Moreover, it is emphasized that the usefulness of financial information is enhanced if it is comparable, verifiable, timely and understandable (FASB, 2010). Pijper (1993) stated that corporate annual reports (printed or internet-based) are prepared mainly for external parties according to their informational needs.

However, the nature and extent of corporate reporting has ignited worthwhile debate among researchers and corporate managers, discussing forked issues such as to whom reports are being provided to, the users' needs, the quantity of disclose information, the time of report disclosing and the medium by which reports are communicated to users.

There is a considerable literature devoted to investigate corporate reporting in many aspects and in deferent countries. Many studies have discussed theoretically and empirically the nature and extent of corporate reporting and its role, determinants, consequences and relationship to many corporate characteristics (e.g. McNally et al., 1982; Abd-Elsalam, 1990; Cooke, 1992; Wallace et al., 1994; Al-Modahki, 1995; Wallace and Naser, 1995; Al-Mulhem, 1997; Owusu-Ansah, 1998; Ahmed and Courtis, 1999; Al-Razeen, 1999; Haniffa, 1999; Haniffa and Cooke, 2002; Archambault and Archambault, 2003; Eng and Mak, 2003; Naser and Nuseibeh, 2003; Al-Razeen and Karbhari, 2004; Gul and Leung, 2004; Akhtaruddin, 2005; Al-Htaybat, 2005; Grahama et al., 2005; Ghazali and Weetman, 2006; Abdel-Fattah, 2008; Khlif and Souissi, 2008; Wang et al., 2008; Akhtaruddin et al., 2009; Hassan et al., 2009; Hossain and Hammami, 2009; Zaman Mir et al., 2009; Al-Shammari and Al-Sultan, 2010; Wu, 2010; Stein, 2011; Katmun, 2012; Robertson et al., 2012; Swenson, 2012; Al-Janadi, et al., 2013; Kamel and Shahwan, 2014; Omran and El-Galfy, 2014; McChlery et al., 2015; Samaha et al., 2015; Schoenfeld, 2017).

One of the leading studies that examine corporate disclosure in the developed countries is the study by Cooke (1992). This study investigated corporate reporting and the influence of size, stock market listing and industry type on mandatory and voluntary disclosure in the annual reports of Japanese listed companies. The findings show that large and multiple listed

companies tend to disclose more information in their annual reports. Further, manufacturing companies are more likely to disclose additional information than other types of companies. Gul and Leung (2004) conducted another empirical study in Hong Kong to address the disclosure practice of 385 Hong Kong listed companies and to assess the association between role duality, board independence and voluntary corporate disclosures. The results of regression analyses reveal that the presence of role duality result in lower level of voluntary disclosures. Moreover, it was found that companies with a higher percentage of independent directors disclose less information in their annual reports. Recently in the US, Schoenfeld (2017) examined the level of voluntary disclosure using S&P 500 index and the impact of this disclosure on stock liquidity. It was found that voluntary disclosure increases when a company joins the S&P 500 index, and this increase is accompanied by increased stock liquidity.

In developing countries, Haniffa's study (1999) is one of the most important studies in the disclosure field. Haniffa conducted a comprehensive study concentrating on listed companies in Malaysia. The study aims to investigate the extent of voluntary disclosure (both non-social and social reporting) and analyse it item-by-item, assess the relationship between voluntary disclosure and three groups of characteristics (corporation-specific, corporate governance and personal); and explore the features of companies and boards of directors of Malaysian listed companies. The three groups of variables are: 12 company-specific variables (size, assets-in-place, industry type, listing age, complexity of business, level of diversification, multiple listing status, foreign activities, gearing, profitability, type of auditors and ownership structure); 7 corporate governance variables (cross-holdings of directorships, role duality, board composition, ratio of family members on the board, cross-holdings by chairperson, position of chairperson and significance of finance director sitting on the board); and 7 personal variables (race of chairperson, managing director, and finance director, ratio of bumiputra directors on the board, ratio of bumiputra ownership, qualification of finance directors and ratio of directors on the board trained in business/accounting). The findings show that profitability, top 10 shareholders and industry type are significantly associated with voluntary disclosure. In addition, two corporate governance variables (chair with cross-holdings and a non-executive chair) have a significant relation with disclosure, while two variables of personal characteristics; namely, ratio of bumiputra directors on boards and bumiputra finance directors have a significant impact on social reporting only.

Moreover, Al-Htaybat (2005) carried out a theoretical and empirical investigation on the disclosure practice in Jordan. The level of printed (mandatory, voluntary and overall) financial disclosure was examined at two different points of time 1997and 2002 to identify the effect of

disclosure requirements that took place in 1998 and the existence of new technology developments in 2000. The study also examined the association between printed financial disclosure and company characteristics (size, age, profitability, industry type, ownership structure, and auditor size). Further, the level of Internet financial disclosure was assessed and its association with printed disclosure practices and company size in 2004. The results reveal that the overall level of financial disclosure has improved after the implementation of disclosure requirements in 1998. Regarding mandatory disclosure, no association was found with any of the company characteristics in 1997, however, positive associations were found with company size, company age and auditor size in 2002. With respect of voluntary disclosure, in 1997 it was found that company size, profitability, and the natural resources and food & clothing industries have significant associations, while only foreign ownership seems to have an impact on voluntary disclosure in 2002. In Egypt, Kamel and Shahwan (2014) empirically explored the level of voluntary disclosure and attempted to determine the effect of voluntary disclosure on the cost of equity and debt capital. The researchers constructed a disclosure index to measure the extent of voluntary disclosure in the annual reports of 73 Egyptian listed companies. It was found that there is no association between voluntary disclosure and the cost of equity capital or debt capital.

In the case of Saudi Arabia, as the first investor survey in Saudi Arabia, Abd-Elsalam (1990) focused on the investor's level of use and understanding of the accounting information disclosed in the annual reports of Saudi companies. Using a questionnaire, the researcher concluded that corporate financial reports are considered very important and useful tools that investors rely on them to make their investment decisions. Later, Al-Razeen and Karbhari (2004) examined the interaction between the mandatory and voluntary disclosures in the annual reports. The sample consists of 68 Saudi companies (55 listed and 13 unlisted). The researchers constructed three disclosure indices relating to: mandatory disclosure, voluntary disclosure and voluntary disclosure that closely relates to mandatory disclosure. The findings show that there is no evident relationship between mandatory disclosure and the other types of disclosure in the different industrial sectors. These weak associations imply the lack of effective coordination between the management and the board of directors in preparing annual reports. However, this study was limited to the types of disclosure and no other determinants were taking into consideration with a relatively small sample size. In more recent study, Al-Janadi, et al. (2013) investigated the effect of internal and external corporate governance mechanisms on voluntary disclosure in Saudi listed companies. The study used the annual reports of 87 companies to collect the data and measured voluntary disclosure by a new methodology which

41

use three levels of disclosure (2 if fully disclosed; 1 slightly disclosed, 0 not disclosed). The disclosure index consists of three main groups: General and Financial Information, Corporate Governance Information and Social and Environmental Information. The results reveal that non-executive directors, board size, CEO duality, audit quality, government ownership, firm size and financial sector have a significant impact on the quality of voluntary disclosure, while family members on the board, independent audit committee members, profitability and services sector seem to be insignificant. These findings highlight the important role of corporate governance in providing adequate disclosure.

2.4.2 Corporate internet Reporting

Internet reporting refers to the use of a company's website to distribute information about the financial and nonfinancial performance of the corporations (Ashbaugh et al., 1999; FASB, 2000; Debreceny et al., 2002). It is now common practice for an increasing number of corporations all over the world to disseminate corporate information using the internet to obtain the advantages of the low cost, wide spread, and rapid reach. Over the last years, there has been a considerable amount of research on corporate internet reporting. The research literature reveals that numerous studies have attempted to explain and discuses many aspects of the disclosure of information on corporate websites in different countries (in the USA: Ashbaugh et al., 1999; Smilan and Belevetz, 2000; Allam and Lymer, 2003; Hurtt, et al., 2001; Ettredge, et al., 2002a; Wagenhofer, 2003; Matherly and Burton, 2005; Pendley and Rai, 2009; in the UK: Xiao et al.,1997; Craven and Marston, 1999; Hussey and Sowinska,1999; Crowther, 2000; Xiao et al.,2002; Abdelsalam and Street, 2007; in Canada: Ryan, 2010; in developing countries: Despina and Demetrios, 2009; An et al., 2011; AbuGhazaleh et al., 2012; Robertson et al., 2012; Kuruppu et al., 2015; Al-Sartawi, 2016).

It appears that the relationship between CIR and accounting may be a fruitful area of future research, as Gallhofer and Haslam (2006) address there is a comprehensive need for CIR to be studied and analysed more in-depth in relation to accounting. Thus, in 1999, the International Accounting Standards Committee (IASC) published a study, Business Reporting on the internet, as the first step to developing standards in this area as well as to examine the current level of internet reporting and the actual practice of companies reporting around the world. A survey of a total of 660 largest firms listed by 22 countries was conducted. The study revealed that 86% of these firms had a website, 410 (62%) of which had some form of financial reporting on the websites. Some of the corporations 234 (35.5%) disclosed substantial elements of their financial statements on the web. It concluded that in many countries, a significant number of

corporations use the internet for the dissemination of business information, although they varied in their level of reporting, from high levels in most developed countries (100% for the USA, Canada, Sweden and Germany) to relatively low levels in developing countries (e.g. 53% in Chile)(IASC, 2000).

Another descriptive study by Craven and Marston (1999) regarding developed countries explores the extent of financial reporting of the UK's largest companies on the internet. They attempted to understand the incentive for companies to use the internet for financial disclosure by examining the relationship between CIR and the two factors of company size and industry type and found that, in contrast to industry type, size is a significant determinant of the extent of internet disclosure by the largest companies in the UK. As with the former study, Hindi and Rich (2010) examined the websites of the *Fortune* 100 US corporations in 2003, 2006 and 2009 to determine the level of financial reporting on the internet during these periods. These websites were reviewed to determine the percentage of the companies' various reporting-related features on their websites. It is noteworthy that the number of companies having websites has increased over time, yet these websites vary significantly in both the design and quality of the disclosed information. Similarly, in New Zealand, Fisher et al. (2004) analysed the website contents of all the listed companies to evaluate the status of current internet reporting practice and determine the audit implication of web-based reporting. The study revealed that internet reporting is significantly related to several factors which affect auditing, such as lack of regulation, internet-related risks and users' needs. They conclude that there seems to be a need for further improvement in both internet reporting and auditing. The same approach was followed by Matherly and Burton (2005), who analysed the website contents of 396 publicly traded companies in the US using a list of 35 attributes to determine the types of information that these companies put on their websites. They find that company websites contain less business data and prospective data as well as fewer disclosures of intangibles. There is a significant variation in the amount of published information based on the type of disclosure, the company's industry, and its size.

Xiao et al. (1997) represent one of the earliest empirical studies on the impact of IT on corporate financial reporting (CFR) in the UK. The study attempts to examine the effects of some contingent factors on the relationships between IT use and CFR. Those factors are user type, size, listing status, gearing ratio, and management compensation plan. The findings reveal that the contingency perspective is a useful framework to investigate the impact of IT on CFR and that IT use is correlated more with internal reporting change than with external reporting change.

Xiao et al. (2002) took a different approach. Their study critically reported the current position of financial reporting in the UK and explored the opinions of UK experts on the extent and nature of the impact that the internet may have on financial reporting in the coming future. They concluded that internet technology will significantly affect the future of corporate reporting as it will be embodied by drivers for as well as barriers to change. These factors include the growth of the quantities and types of information provided on the internet, the associated auditing problems, information provided by third parties, benefits for both users and preparers, internet reporting problems, access to the internet, incentives to adapt internet reporting, and lack of regulations. In contrast, Crowther (2000) chose to examine the influences of the technological and communicative abilities of the internet on corporate reporting and revealed that the internet is more beneficial for corporations than it is for individuals. Corporations have adapted internet technology to generate a stakeholder-interested image of themselves.

From a different perspective, Kelton (2006) conducted an experimental study to examine the influences of format and type of presented information on a company's website on non-expert investors' abilities to make rational decisions. Although this study was limited to a specific type of hyperlink used in corporations' reports, it concluded that presentation format and type of internet disclosure have considerable effects on investor judgments, and asserted that there is a vital demand to take action to regulate internet reporting practices. Likewise, Allport and Pendley (2010) utilised the same experimental approach. They considered the impact of some web-based reporting features on users' perceptions of the credibility of CIR. The study found that surface features of a website can significantly impact users' perceptions as well as investment attractiveness.

In the developing countries, a number of studies have attempted to explain the actual practice of internet reporting in different countries (Malarvizhi and Yadav, 2009; Despina and Demetrios, 2009). Ismail (2002) conducted a descriptive study in the Gulf Cooperation Council (GCC) countries to examine the extent of financial information disclosed on the internet by the GCC countries. This cross-sectional study states some factors that affect the probability of a firm to disseminate financial information on the internet, which are a combination of firm characteristics (size, leverage, and profitability), industry type, and country. Moreover, Zager and Gulin (2006) explored the financial internet reporting system in the Republic of Croatia by describing the financial reporting of listed Croatian companies. The authors state that joint venture companies are leaders in internet financial reporting. It is affirmed that the PDF format is the predominant format in the published reports, whereas some other more advanced formats,

such as XBRL, are rarely used. Hunter and Smith (2009) undertook an extensive study to assess the impact of using internet financial reporting on emerging markets in Brazil, India, Indonesia, Russia, and South Africa. Depending on the efficient market hypothesis, the findings suggested that the internet has positive effects in emerging markets and that market performance on stock exchanges does improve after firms' have begun to utilise internet technology. Furthermore, Aly et al. (2010) conducted a study in Egypt to examine the level of CIR in the largest Egyptian companies and determined the most effective factors explaining CIR practice using the content analysis approach. Focusing on the supply side only, they revealed that nearly more than half of these companies use websites to disclose a considerable portion of corporate information. Similarly, the extent of internet reporting by Indian companies was investigated by Garg and Verma (2010), showing that there is a satisfactory and adequate level of disclosure on the firms' websites in India. In Jordan, Al-Htaybat et al. (2011) concluded that hard-copy annual reports are still the primary source of information for users. The findings revealed that two economic concerns affect the use of CIR from the point of view of participants; internet access cost and printing accounting reports cost.

Using a logical view, Arafa (2012) sought to obtain additional insights into an understanding of CIR practices in Egyptian listed companies, whereby both qualitative and quantitative aspects of CIR were investigated. The study attempted to elaborate CIR as a whole process that integrated the perspective of the various involved participants to acquire a comprehensive picture of the CIR practices at the organizational level in Egypt. Samaha and Abdallah (2012) compared CIR practices in developed and developing countries. By analysing the nature of web-based corporate disclosure in both Egypt and the UK, it was evidenced that CIR practice in Egypt, as an example of a developing country, is still lagging behind those of the UK, which represents the developed countries, and that determinants of voluntary adaption of CIR in Egypt are diverse compared to those documented in the UK. Moreover, Singh and Singh (2015) explored the extent of internet financial reporting by the top 30 Indian public and private companies. Considering the limited size sample and focusing on one disclosure dimension, the findings showed that, to some extent, both sectors use websites for financial disclosure at different levels. Similarly, Kuruppu et al. (2015) examined the extent of IFR in Sri Lanka listed companies. They analysed the IFR practice of 244 companies divided to 20 industry sectors. The findings indicated that 59% of these companies have a website, while only 43% of them disclose financial information on their websites. These relatively low rates of IFR adoption are attributed to the regulatory authorities and the companies' management, who are not aware the benefits of IFR. Recently, Dolinšek and Lutar-Skerbinjek (2018) investigated the practice of

voluntary internet financial disclosures by large companies in Slovenia. The research was conducted on a sample of 192 large companies in Slovenia. A binary logistic regression was conducted to determine the association between IFR and company's size, profitability, age, legal form, ownership dispersion and industry sector. The findings show that 52% of the companies use IFR and that there is a substantial difference between the companies that use or do not use IFR. It was found that profitability and age are not significantly associated with IFR, while large size companies, public limited companies, companies in the financial, energy or ICT sectors and more concentrated ownership companies are more likely to use IFR. However, this study formulates the dependent variable as a binary encoded (companies using the IFR and companies that do not use the IFR) and has not examined the extent or quality of IFR. A summary of these studies is shown in appendix 1.

It can be stated that these studies focus on the existence of a company's website and, in the case of having a website, they seek to analyse content and the presentation of the information. As those previous studies have shown, it seems that CIR practice is an area of concern for researchers and that there is a general consensus on the importance of adopting CIR all over the world as well as the need to make the most of CIR as a communication of business performance to stakeholders. However, a growing body of literature indicates the determinants of CIR and points out the relationship between CIR and other factors in order to obtain a comprehensive understanding of the extent, content, and format of information disclosed via the internet by corporations. The next section will present these studies in detail.

2.4.3 Determinants of CIR

2.4.3.1 Firm characteristics and CIR

A large and growing body of literature has examined the determinants of internet reporting in developed countries (Ashbaugh et al. 1999; Debreceny et al. 2002; Ettredge et al. 2002a; Marston, 2003; Oyelere et al., 2003; Fisher et al., 2004; Lodhia et al., 2004; Trabelsi et al., 2004; Matherly and Burton 2005; Chan and Wickramasinghe, 2006; Trabelsi, 2007). On the other hand, a few studies have been conducted in developing countries (Ismail, 2002; Davey and Homkajohn, 2004; Xiao et al., 2004; Hamid, 2005; Al-Htaybat and Napier, 2006; Zhang et al., 2007; Bekiaris et al., 2014; McChlery et al, 2015; Omran and Ramdhony, 2016). Ashbaugh et al. (1999) point out CIR practices and provide primary evidence on the reasons why some firms publish financial information on their websites while others do not. The

findings suggest that firm size and profitability are crucial factors in the CIR engagement decision. Moreover, participating firms refer to the distribution of information to shareholders as the main reason for adapting internet reporting. Ashbaugh et al. (1999) conducted one of the leading studies to examine the internet reporting issue; however, no theoretical rationale was provided for the analysis.

In an attempt to alleviate this problem, a number of studies that followed use theories on voluntary disclosure in hypotheses generation. Ettredge et al. (2002a) classify CIR into compulsory disclosures by official bodies (i.e. required filings by the SEC) and voluntary disclosures. They examined the possibility of using theories of incentives for voluntary disclosure to demonstrate both types of CIR practice. The results indicated that size and information asymmetry are vital aspects in determining the level of required disclosures on the corporate website, whereas size, information asymmetry, demand for external capital and disclosure reputation are the main determinants of voluntary internet disclosure. Focusing on the speed feature of internet reporting, Ettredge et al. (2002b) in another study investigated the factors affecting the speed of updating the corporations' website. The findings showed that this is associated with profitability and with providing multiple report formats rather than high earnings announcements and linking to EDGAR, while numbers of shareholders, financial analysts and firm size are not explanatory variables for updating speed.

Debreceny et al. (2002) conducted a study in 22 countries to investigate firm characteristics (size, listing on US securities markets, foreign listing, the level of technology, growth prospects and intangibles, firm-specific market risk, leverage) and environmental characteristics (internet penetration and national disclosure level) as determinants of CIR. Unlike Ettredge et al. (2002a), who classified CIR content into required and voluntary items, they surveyed the CIR content and presentation methods. They found that disclosure environment and technology level are associated with CIR presentation more than CIR content. Matherly and Burton (2005) analysed the effects that size, industry type, and type of disclosure have on the amount of information disclosed on the companies' websites in the USA, concluding that the amount of disseminated information varies substantially based on those factors.

Among the earliest studies in developing countries, Xiao et al. (2004) explored the determinants of internet reporting in Chinese listed companies using more inclusive approach by analysing multiple dimensions of CIR, namely mandatory items, voluntary items, content and presentation methods. The findings revealed that there is a significant and positive relationship between the proportion of institutional ownership and CIR, while ownership by domestic private investors, foreign investors, and the state are less associated with CIR. As

mentioned in the previous section, Ismail (2002) investigated the factors that influence the financial reporting on the internet in the GCC. The researcher found that firms' decisions to use the internet to publish financial information depends not only on the level of firm characteristics (size, leverage, and profitability), but also on the interaction between these characteristics and industry type and country.

In Egypt, Aly et al. (2010) focused on the determinants of CIR in their study. They used a content analysis approach to investigate the CIR practices of the top 100 Egyptian listed companies. The study identified the association between seven firm characteristics variables and CIR to assess the effects of these factors on CIR. They suggested that the main factors that have an impact on the content and presentation of internet reporting in Egypt are profitability, foreign listing, and industrial sector (communications and financial services). Elsayed (2010), in another study in Egypt, explored the relationship between CIR and the corporate governance and ownership structure variables and attempted to identify the economic consequences of CIR. The study utilised not only more explanatory factors than the previous study (Aly et al., 2010), but also expanded the investigated components of CIR to encompass timeliness and usability in addition to content and presentation. By analysing the annual reports of Egyptian listed companies based on a self-constructed disclosure index, the study concluded that CIR in Egypt is affected by various variables, such as company size, leverage, legal form, assets in place, financial type, foreign listing, audit type, share volatility, share activity, share issuance, block holder ownership, managerial ownership, governmental ownership, board size and family members on the board. Moreover, the study revealed that there is a considerable variation in these determinants among the main components of CIR, namely content, presentation, timeliness and usability. Finally, the study indicates that firm value is positively influenced by CIR.

Furthermore, AbuGhazaleh et al. (2012) studied Jordanian listed companies' internet reporting in an attempt to determine the factors that affect the corporate decisions regarding the development of a website. Based on semi-structured interviews, they concluded that website presences heavily depend on several factors, namely reputation and image enhancement, firm promotion and international impacts. The absence of a corporate website is attributed to top management beliefs or attitudes, management change, lack of competition and a relatively long period of being listed on the Jordanian stock exchange. In Qatar, Hossain et al. (2012) also conducted a study to examine the relationship between CIR and some firm characteristics and found a significant association between CIR and firm size, assets in-place and business complexity. Moreover, Miniaoui and Oyelere (2013) focused on internet financial reporting

48

(IFR) in UAE listed companies, aiming to identify the nature and extent of IFR practices. Also, their study examined only firm characteristics as determinants of IFR and found that size, leverage, profitability and being in the financial sector are the main predictors of IFR adoption. Similarly, Dolinšek et al. (2014) used a disclosure index comprising 32 content items and 18 presentation items to evaluate the level of internet financial reporting by Slovenian companies and to assess the impact of six firm characteristics, namely size, profitability, legal form, ownership concentration, age and sector, on IFR. They found that size, ownership concentration, legal form and sector of operation significantly affect the level of IFR. In India, Soriya and Dhaigude (2016) examined CIR in the Indian services sector excluding the financial and production sectors. They utilized a disclosure index divided into three sub-indices: general, financial and presentation and used OLS regression to assess the relationship between CIR and firm characteristics. The findings revealed that size, profitability, productivity and liquidity are significantly associated with CIR, while growth and leverage are not. More recently, Ahmed et al. (2017) explored the nature and determinants of CIR among non-financial listed companies in Egypt. A disclosure index was constructed to examine the websites of those companies in 2010 and 2011 including three main sub-indexes: content, user support and presentation. The study applied a regression models to assess the association

between firm characteristics and CIR. The results reveal that 40.7% and 42.7% of the companies disclosed some form of financial information online in 2010 and 2011, respectively. Further, it was found that size, industry type and foreign listing are significantly associated with CIR total, content and user support, while profitability has a significant and negative relation with presentation only. Although this study was conducted at two points in time, it was limited to non-financial companies and the disclosure index was classified into only three categories.

Most of the previous research emphasizes the significance of firm size as a crucial factor in determining the level of corporate internet reporting. These studies have conducted in-depth analyses to assess the impact of other firm characteristics without taking into consideration the influences of other external characteristics, except Debreceny et al. (2002), who stressed the importance of environmental characteristics as determinants of CIR. However, there is a potential for further factors that may affect the decision to distribute corporate information on the internet, which requires further investigation. On the top of these factors is corporate governance; therefore, the next section reviews the studies that shed light on the relationship between corporate governance and corporate internet reporting. A summary of these studies is presented in appendix 2.

2.4.3.2 Corporate governance and CIR

For the past decade, researchers have devoted an increasing amount of attention to the influence of corporate governance characteristics on corporate disclosures in general. However, the main emphasis has been targeted at developed countries (Udueni, 1999; Klein, 2002; Lee and O'neill, 2003; Padgett and Shabbir, 2005; Abraham, 2008; Ammann et al., 2011; Stein, 2011; Hermalin and Weisbach, 2012; Ahmed, 2015; Mkumbuzi, 2016) with a few studies on large emerging economies and developing countries (Forker, 1992; Ho and Wong, 2001; Cheng and Courtenay, 2006; Suphakasem, 2008; Ronnie Lo, 2009; Akhtaruddin et al., 2009, Al-Shammari and Al-Sultan, 2010; Samaha et al., 2015; Omran and Ramdhony ,2016). Given the growing focus on corporate governance to improve disclosure transparency and the evidenced associations between corporate governance factors and corporate disclosure accompanied with the increased use of the internet as a media of corporate information dissemination, corporate governance has recently gained a reasonable consideration as a determinant of internet-based disclosures. The following presents a detailed discussion of those recent studies that examine the influence of corporate governance factors on CIR.

In light of recent changes in the regulatory environment of the London Stock Exchange to enhance the credibility of disclosure, Abdelsalam et al. (2007) explored CIR and its determinants. Based on a sample of 110 London-listed companies, the study investigated the link between the comprehensiveness, usability and credibility of CIR disclosures and corporate governance measures. By applying a disclosure checklist of 143 items, they concluded that the comprehensiveness of CIR disclosure is associated with analyst following and other measures of corporation governance such as director holding, director independence, and CEO duality with holding size, profitability, industry, and high growth/intangibles as control variables. Moreover, the findings suggest that there is a strong case for more improvement in CIR by London-listed companies, particularly with respect to corporate site usability and the credibility of disclosed information.

Similarly, Kelton and Yang (2008) examined the effect of corporate governance on the level of disclosure measured by internet Financial Reporting (IFR) practice. The study analysed the websites of 284 firms listed on the NASDAQ National Market in 2004 to assess the extent of IFR and its relationship to corporate governance. They utilised a disclosure index of 36 items to measure IFR presentation format and information content, and used ownership structure, shareholder rights, board composition, and audit committee characteristics to measure corporate governance. The results revealed that firm's engagement in IFR depends on the

presence of weak shareholder rights, a lower percentage of block holder ownership, a higher percentage of independent directors, more audit committee meetings, and a higher percentage of audit committee members who are financial experts. The findings indicated that corporate internet disclosure practice is influenced by corporate governance mechanisms and that firm size plays a critical role in determining the association between IFR and corporate governance. Abdelsalam and Street (2007) studied CIR by UK listed companies on the London Stock Exchange concentrating on the dimension of timeliness. The research investigated the effects of corporate governance characteristics and firm characteristics on the timeliness of corporate internet reporting. Using a sample of 115 UK companies, timeliness was measured based on a constructed disclosure index containing 13 criteria. The primary multivariate analysis showed a significant relationship between corporate internet reporting timeliness and two corporate governance characteristics, namely board experience and board independence. Conversely, block ownership and role duality are associated with less CIR timeliness disclosure. Additional analysis, which applied logistic regression, was conducted to provide a greater understanding of CIR timeliness dimensions and corporate governance characteristics. This analysis showed that role duality and block ownership are significantly negatively associated with CIR timeliness, while US listing and being in a technology industry have a positive relationship with it. Overall, the study indicates that UK listed companies need to enhance the timeliness of their CIR in order to provide the types of information that is useful to investors, and recommends that regulations are required for the improvement of CIR timeliness disclosure.

The importance of CIR timeliness was also examined in a study by Abdelsalam and El-Masry (2008). The study utilised a modified index to investigate the effects of board independence and ownership structure on CIR timeliness practices by Irish-listed companies. They used the percentage of independent directors, role duality and average tenure of directors to represent board composition, whereas managerial ownership and block holder ownership were used as ownership structure proxies. After controlling for several firm characteristics (size, audit fees and profitability), the multivariate regression analysis showed a positive association between CIR timeliness and both board independence and CEO ownership. The findings revealed that firm size plays a significant role in assessing CIR timeliness behaviour. Ultimately, this study agrees with Abdelsalam and Street (2007) in that Irish companies, just as UK listed companies, should pay more consideration to improving their CIR timeliness in many aspects.

Regarding developing countries, Barako et al. (2006) sought to assess the determinants of the internet disclosure presence of Indonesian listed companies using a sample of 343 companies. The findings demonstrated that CIR is positively associated with size and age of listed

companies, whereas profitability, ownership structure, leverage, industry type, audit committee independency, and percentage of independent directors are not among the critical determinants explaining the CIR practices of Indonesian companies. Furthermore, this study points out that companies in Indonesia need to be encouraged to focus on and expand CIR disclosures practices. In another study, Ezat and El-Masry (2008) surveyed 50 Egyptian listed corporations to investigate the association between CIR timeliness and corporate governance characteristics and firm variables. The study utilises a disclosure index to evaluate the timeliness of CIR. Depending on multiple and logistic regression models, the findings indicated that CIR timeliness is significantly and positively related to firm size, service activity, type of industry, liquidity, ownership structure, board composition and board size.

Further, Elsayed (2010), concentrating on corporate governance and ownership structure variables, explored CIR practices in Egypt to determine the key factors affecting the CIR of 343 Egyptian listed companies. The researcher constructed a disclosure index that includes 100 items to measure CIR components, namely content, presentation, timeliness and usability. The study concluded that CIR in Egypt is associated with corporate governance and ownership structure variables, although these associations vary considerably among the main components of CIR. Company size, leverage, legal form, asset in place, financial type, foreign listing, audit type, share volatility, share activity, share issuance, block holder ownership, managerial ownership, governmental ownership, board size and family members on the board are the main variables found to influence the four components of CIR. Furthermore, the study suggested that firm value, measured using Tobin's ratio and market-to-book equity ratio, has a positive effect on CIR.

In Turkey, Erer and Dalgic (2011) took the same approach and examined the CIR behaviour of 173 non-financial companies listed on the Istanbul Stock Exchange to determine the potential influences of corporate governance characteristics. To measure the extent of CIR, a developed disclosure index including content (45 items) and format (15 items) is used, while corporate governance is measured by ownership structure (represented by managerial ownership, institutional ownership, and the percentage of free floating shares of the company), board composition (represented by board size and the percentage of the independent directors on the board), corporate governance rating, and foreign listing variables. Based on firm size, profitability, leverage and the use of a Big4s auditor as control variables, the results provide evidence that the percentage of the independent directors and corporate governance rating are positively and significantly related to internet financial reporting. Conversely, no significant association was found between internet financial disclosure and board size, foreign listing and

ownership structure variables. None of the control variables have been found to affect internet financial reporting except for the significant and positive influence of company size. In Malaysia, Kamalluarifin (2016) limited his study to the timelines of CIR. He investigated the impact of corporate governance (board independence, board experience and role duality) and firm characteristics (size, leverage and profitability) among the top 95 Malaysian listed companies. The findings revealed a significant association between board independence, board experience, leverage and profitability and the timeliness of CIR. Similarly, Al-Shammari and Al-Saidi (2015) investigated the impact of corporate governance (board size, board composition and role duality) and firm characteristics (size, leverage, profitability, liquidity, industry type and ownership structure) on the timeliness of CIR in Kuwait. They concluded that Kuwaiti listed companies disclose only 39% of the timeliness index's items. Further, it was found that disclosing timely information on the website of Kuwaiti companies is associated with a smaller board, more non-executive directors, the separation of CEO and chairman roles, larger financial companies and more outsider ownership.

Recently, Omran and Ramdhony (2016) examined the extent of IFR of Mauritian listed companies. They applied a content analysis using a disclosure index consisting of 52 items. Despite the small size sample (34 companies), some firm characteristics (size, liquidity, leverage, industry type and profitability) and corporate governance variables (board size and audit quality) were used as explanatory variables. Only company size, liquidity and board size show a significant relationship with IFR. Moreover, Sanad and Al-Sartawi (2016) also explored the association between IFR and some corporate governance variables in Bahrain. The results suggested a weak relationship, where only board size and Big4 audit firms have a positive relationship with IFR.

It can be seen that the above-mentioned studies emphasized the vital impact of corporate governance attributes on CIR practices in many developed and developing countries and stressed the noteworthy influence of the relationship between corporate governance and CIR. Appendix 3 summarizes these studies.

Although many studies have reviewed CIR in developed and developing countries, few studies have been investigated in Middle Eastern countries, while even fewer have addressed this issue in the Saudi context. In the following, prior studies regarding CIR in Saudi Arabia are reviewed in detail.

2.4.4 CIR in Saudi Arabia

Several studies have been published addressing disclosure issues in Saudi Arabia (e.g. Abd-Elsalam, 1990; Al-Modahki, 1995; Kantor et al., 1995; Al-Mulhem, 1997; Al-Mubarak, 1997; Al-Razeen, 1999; Al-Razeen and Karbhari, 2004; Al-Saeed, 2006a; Robertson et al., 2012; Al-Janadi, 2013). In fact, most of these studies are descriptive and expose the current disclosure practices of Saudi companies. However, the notion of CIR is barely mentioned in the Saudi studies, as only few studies have been conducted in this regard and these were very limited and incomprehensive.

Al-Saeed (2006b), examines CIR using a sample of 46 Saudi firms related to three different sectors, namely agriculture, cement and industry. The study shows that nearly 87% of sampled companies have websites, noting that the cement sector has the best implementation of CIR. Furthermore, the utilization of CIR can be explained significantly by profitability and firm size. The main concern regarding disclosed areas was found to be that the information relates to the company's general information and products. This study experienced some limitations, including a relatively small sample size (46 firms) and a focus on corporate transparency provisions only.

Furthermore, Al-Motrafi (2008) attempted to explain corporate internet disclosure practices as well as to conceive the different perspectives of users with respect to CIR in Saudi Arabia. Three different groups of users, namely institutional investors, financial analysts and private investors, were examined to assess the impact of financial internet disclosure on their attitudes and needs using a questionnaire survey. In addition, a developed financial disclosure index was utilised to explore the nature and scope of CIR by Saudi public companies and to point out differences, if any. The findings showed the various views of the three groups of users concerning internet reporting practices. While the view of institutional investors was relatively similar to that of the financial analysts, private investors had significantly different views. Furthermore, the descriptive analysis revealed that 84% of Saudi companies have a website, but only 45% of them have a financial information section. Regarding firm characteristics, it is demonstrated that there is a significant association between financial internet reporting and size, stock market listing, and the proportion of institutional ownership structure. In contrast, profitability, type of industry, type of auditor, level of government ownership, individual ownership, free float, and board structure show no significant relationship with internet reporting behaviour.

The implications of financial internet reporting for auditing have been identified by Alshowaiman (2008). The study surveyed Saudi listed companies to, first, investigate the actual situation of internet financial reporting and determine the key factors that may affect IFR practices and, second, to document IFR-related auditing issues. The researcher combined a questionnaire, a semi-structured interview and a disclosure index for 74 companies to obtain the relevant data. The results indicated that IFR is positively associated with the Big4 audit firms, industry, and location variables. None of the other IFR's determinants, which are the proportion of government ownership and the proportion of foreign ownership, have been found to influence the extent of IFR. Additionally, it is revealed that Saudi companies have poor and insufficient performance in their internet reporting and that IFR needs to be increasingly linked with auditing to improve audit efficiency and effectiveness.

Focusing on corporate governance disclosure, Hussainey and Al-Nodel (2008) conducted another study to investigate the extent of internet disclosure regarding corporate governance information by Saudi listed companies and the diversity practices of such disclosure among different sectors. A corporate governance disclosure index was constructed to analyse the content of 64 company websites. It is concluded that although most of the Saudi companies use the internet to disseminate corporate governance information, the disclosed information is considerably varied among corporations, depending on industry type, with the banking sector placed at the highest level and the industry and service sectors at the lowest.

To compare corporate internet reporting practices between countries, Al-Jaber and Mohamed (2003) surveyed three countries, namely Saudi Arabia, Egypt, and Kuwait, to assess the variations in the level and content of internet disclosure. The findings suggested that these regional countries vary to some extent in their internet reporting and are straggling far behind the developed countries. Regarding the most frequently reported information, they stated that company products information comes first followed by financial information. Recently, Al-Sartawi (2016) conducted a descriptive study to measure the level of online financial disclosure in the GCC countries, including Saudi Arabia. The study focused only on the financial disclosure, and the disclosure index includes 71 items for content and 19 for presentation. The results revealed that the overall level of online disclosure in the GCC countries is 77% and that it varies according to country and industry type. However, this study did not investigate the effect of any variables, such as firm characteristics or corporate governance, on the level of online financial disclosure. A summary of these studies is presented in appendix 4. However, a few studies have pointed out the nature and practice of corporate governance in Saudi

companies without investigating its relationship with CIR practices (Al-Harkan, 2005; Falgi, 2009; Almajid, 2008; Al-Gazawe, 2010; Abu-Musa, 2010, Al-Ajlan, 2005; Almarshad, 2011; Alkahtani, 2013; Al-Janadi et al., 2013).

Based on the above-mentioned discussion, it is notable that most of the studies concerning CIR are performed in developed countries or Asian countries. A few studies have been conducted in the Middle East, particularly in Saudi Arabia. However, nearly all CIR studies in Saudi Arabia attempt to describe the actual practices, while only limited variables are identified as being potential explanatory variables for CIR. That is, these previous studies (Al-Saeed, 2006a; Al-Motrafi, 2008; Alshowaiman, 2008) use only firm characteristics as determinants of CIR, with the exception of Al-Motrafi (2008), who includes a few corporate governance variables in his study. The present study seeks to fill the gap by examining the impact of firm characteristics and corporate governance variables (board of directors, ownership structure and audit committee) on CIR.

Furthermore, the sample sizes used in the prior Saudi studies are relatively small (e.g. 46 in Al-Saeed's study and 74 in Alshowaiman's study), while the sample size of the current study is comparatively larger (170). Moreover, Al-Motrafi (2008) categorized CIR into more than one component (content, credibility and usability). In addition, Alshowaiman (2008) classified CIR into three components (content, presentation and audit). Similarly, limited international studies have classified CIR into more than one component (e.g. Debreceny et al., 2002; Xiao et al., 2004; Abdelsalam et al. 2007; Kelton and Yang, 2008). This study expands the CIR classification into five components, namely content, presentation, timeliness, usability and audit, which fills this gap in the CIR literature. In addition, the checklist used to measure CIR contains nonfinancial information that has not been tested widely in the previous studies. Most of the prior studies concentrated on the extent of internet financial reporting and neglected the disclosure of non-financial information. Accordingly, it can be argued that little contribution has been made in addressing the implication of firm characteristics and corporate governance on CIR, especially from the perspective of Saudi firms.

As far as the researcher is aware, there are no previous studies in the Saudi context that explore the link between CIR and all the mechanisms of corporate governance, classify the CIR into different components including timeliness, and encompass non-financial information in calculating an CIR index. This study aims to contribute to disclosure studies by exploring the association between corporate governance variables and CIR and its components and using some variables for the first time in the CIR studies. Furthermore, it aims to provide insights to investors and regulators about why companies are adopting CIR and what the key determinants

of such an adoption are. It is also proposed that accountants and auditors can benefit from this study in their decisions regarding the disclosure of financial and non-financial information on the internet to improve the communication function of corporate reports.

2.5 Summary

This chapter discussed the concepts of CIR and corporate governance and reviewed the empirical studies that have explored the current practice of CIR. Starting with internet reporting, this chapter provided a brief discussion about the nature of CIR and its actual practices, as online disclosure is an important issue in the present business environment. Next, an overview of the development of the accounting profession in Saudi Arabia and the related regulation was presented as this is considered the platform for CIR implementation. Then, the chapter discussed corporate governance notion, objectives and importance. It also introduced corporate governance variables, which are used to explain the expected impact of corporate governance on CIR. The current situation of corporate governance in Saudi Arabia was reviewed next, it helps to represent the motivation to choose Saudi Arabia as a context for this study. Identifying the conceptual framework of both CIR and corporate governance is perceived as a base to achieve the objectives of this study and help in examining the relationship between CIR and corporate governance in the Saudi context. After that, the chapter has discussed the empirical studies that have investigated the current practice of CIR in different countries to determine the areas that need more investigation. These studies have revealed mixed results, which can be attributed to the differences in the sampling techniques, the statistical analyses, and the settings in which these studies were conducted. Reviewing these studies has helped to expose the gap in the CIR literature that the present study aims to fill and forms a base that can help in answering the research questions. It is noted that a few studies have been conducted in the Middle Eastern region. However, the majority of these have two limitations; they examine the association between CIR and firm characteristics and pay less attention to corporate governance variables, and they use CIR without classifying it by its sub-components. Therefore, the main contributions of the current study are that it investigates the impact of all corporate governance mechanisms on CIR in addition to firm characteristics, and that CIR is classified into the five components (content, presentation, timeliness, usability and audit), which will provide a better understanding of the impact of corporate governance and firm characteristics on CIR. The next chapter presents the relevant theories that are related to CIR and may justify the need to examine CIR practice in Saudi Arabia and discusses the

development of the main hypotheses of this study, which are derived from the theoretical framework.

CHAPTER 3
THEORETICAL FRAMEWORK AND HYPOTHESE FORMULATION OF VOLUNTARY DISCLOSURE

3.1 Introduction

One aim of this chapter is to review theories concerning voluntary internet reporting in order to provide a theoretical foundation to develop the research hypotheses and perform the empirical analysis. Moreover, a review of the disclosure literature reveals that CIR as a type of voluntary disclosure is a complex phenomenon that may be influenced by many factors. In order to achieve the first two objectives of this study, namely to understand the actual CIR practices and to determine the significant factors that affect the decisions regarding CIR in the Saudi context, it is important to measure some explanatory variables and determine the relationships between these variables and CIR practices, if any. As such, the other aim of this chapter is to propose a number of hypotheses that assume a relationship between the disclosure indices and four groups of independent variables. Six disclosure indices are used in this study to assess the extent of CIR which are: total, content, presentation, timeliness, usability, and audit. These sub-indices are used to obtain a more in-depth understanding and evaluation of the quantity and quality of CIR practices which can help in justifying the adoption of internet reporting and improve the usefulness of CIR for different users.

This chapter is structured as follows: section 3.2 presents the theoretical framework and reviews the four main approaches. Section 3.3 discusses formulating the hypotheses which are related to firm characteristics variables and corporate governance variables. A summary of this chapter is provided in section 3.4.

3.2 Theoretical framework

Over the past few years, there had been many substantial changes in the economic environment that have had the potential to affect the nature of disclosure. These changes breed different theories based on the different situations where disclosure practices are being examined. Furthermore, many accounting researchers argue that accounting studies should be elaborated to include different dimensions, such as social, political and cultural aspects (Hopwood, 2000).

Therefore, many theories are used to explain the different disclosure practices which reflect the gradual shift in the emphasis of disclosure over time. However, all these theories are logical and acceptable and there is no consensus on one comprehensive or best theory of disclosure (Haniffa, 1999; Healy and Palepu, 2001 and Verrecchia, 2001). Thus, the most common theories used in the disclosure literature are categorized into four main approaches: economic approach, political-economic approach, cost-benefit approach and innovation adoption approach. The next sections demonstrate these theories in details.

3.2.1 Economic approach

The economic approach perspective depends mainly on the objective of maximising profit and avoiding loss. This approach also focuses on the needs and interests of shareholders and managers only. There are four disclosure theories that can be included in this approach; these are agency theory, signalling theory, stewardship theory and capital need theory.

3.2.1.1 Agency Theory

Agency theory is one of the most widely used theories in the disclosure literature, and a considerable amount of disclosure studies is based on it. This theory is concerned with the relationship between a principal and an agent, which Jensen and Meckling (1976) define as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf, which involves delegating some decision making authority to the agent." That is, agency theory focuses on the relationship between two parties, the principals and the agents, whereby the agents are empowered to perform services and make decisions on behalf of the principals. The separation between the principal and the agent in this agency relationship may generate a conflict between their interests and give rise to agency costs to monitor the agent actions (Fama and Jensen,1983). In accounting research, agency theory is commonly used to explain the management incentives for voluntary disclosure (e.g. Cooke, 1991, 1993; Hossain et al., 1994; Xiao et al., 2004; Li et al., 2008). According to agency theory, the owners (principals) entrust the managers (agents) with managing the firm and expect the managers to carry out their responsibilities in the best interest of the owners (shareholders). Due to the separation of ownership from management, a potential conflict of interest may occur, causing some agency problems. It is assumed that shareholders are willing to maximise their profits, while managers are interested in increasing their compensations (Firth, 1979). Because managers have access to more information that is not available to

shareholders, and as a means of alleviating this problem of information asymmetry, shareholders may incur costs (agency costs) to monitor managers' behaviour and ensure that they are not using this superior information to increase their own interests. One proposed way to reduce monitoring costs is by increasing disclosure (Craswell and Taylor, 1992). On the other hand, agency theory assumes that managers may make decisions that maximise their benefits even if they are against owners' interests; thus, managers may refrain from disclosing certain information if they believe that this information may harm their interests. However, it is suggested that managers may be motivated to disclose more information to distinguish themselves from poor managers, especially if they have fulfilled their tasks well (Demski, 1974). Further, high agency costs could decrease the compensation of managers, thus, managers are keen to reduce agency cost by disclosing more information to convince shareholders that they are acting in the best interests of shareholders.

Providing that managers have the incentive to reduce agency costs using voluntary disclosure, disclosure can be considered as a vital way to mitigate agency problems (Healy and Palepu, 2001). Since online disclosure is a type of voluntary disclosure, it can be stated that internet disclosure is a means to help management reduce agency costs as well as enhance transparency. Consequently, internet disclosure is expected to be associated with many variables, such as firm characteristics as well as some characteristics of board of directors and ownership structure. Several studies that address the use of voluntary disclosure by management to reduce agency cost have used such variables to explain this practice (e.g. Cooke, 1993; Lang and Lundholm, 1993; Hossain et al., 1994; Xiao et al., 2004; Marston and Polei, 2004; Ghazali and Weetman, 2006; Huafang and Jianguo, 2007; Kelton and Yang, 2008; Aly et al., 2010; Ahmed, 2015).

In Saudi Arabia, one of the primary aims of the Corporate Governance Code is to mitigate agency conflict between shareholders and managers by improving disclosure quality, transparency, accountability and the responsibility of board of directors (Alshehri and Solomon, 2012). The importance of such regulations emerges from the high level of ownership concentration in Saudi listed companies (Al-Nodel and Hussainey, 2010), which may have a negative impact on the rights of small shareholders and is likely to result in a conflict of interest between small shareholders and large shareholders. For instance, directors are more often, as in most developing countries, appointed by large shareholders due to their social or political relationships rather than their proficiency or experience (Haniffa and Hudaib, 2007). As such, those directors may either act in the interest of large shareholders or perform their roles ineffectively because they lack the required expertise. These practices can adversely affect

voluntary corporate disclosure and financial performance and, hence, emphasise the substantial need for an agency theoretical framework in the Saudi context (Albassam, 2014).

3.2.1.2 Signalling theory

Initially, signalling theory was developed to explain the information asymmetry problem in labour markets (Spence, 1973). Signalling theory describes the behaviour of two parties, one of whom (insiders) have access to superior information compared to the other parties (outsiders), leading to an information asymmetry problem, which is a basic condition of signalling theory (Omran and El-galfy, 2014). This problem can be mitigated by the party which has more information signalling to the other parties (Morris, 1987). Thus, signalling theory can be useful in explaining voluntary disclosure practices in corporate reporting (Ross, 1977). Managers, who have more information than stakeholders, try to reduce information asymmetry by signalling specific information to investors and other stakeholders using voluntary disclosure. In addition, in spite of information asymmetry, signalling theory also provides an explanation of the company's incentive to report more information voluntarily; that is, managers have the motivation to disclose information as a means to distinguish themselves from other competitors in the market in order to attract more investors and enhance their reputation (Verrecchia, 1983). This economic incentive to voluntary disclosure is one of the crucial assumptions of signalling theory for voluntary reporting (Ferrer, 2016). Further, signalling theory, similar to agency theory, realizes the effect of the separation between ownership and managers and that market pressure would force managers to disclose all the required information to investors (Haniffa, 1999). However, the signalling costs that are related to the quality of disclosed information may differentiate signalling theory from agency theory (Morris, 1987). This suggests that managers have a strong incentive to disclose quality information as it may result in minimizing signalling costs. As so, higher quality companies are motivated to disclose more information to distinguish themselves from other low quality companies and signal their proficient performance (Xiao et al., 2004). Likewise, companies that have bad news also have the incentive to disclose the bad news in order to have legal protection and to avoid any reputational costs that may be incurred in the case of failure to disclose timely information (Skinner, 1994). Even if companies have no information to disclose, they still have the motivation to signal no news to investors and other stakeholders in order to be distinguished from other companies with bad news (Ross, 1979). Moreover, it is argued that companies that have disclosed information in the past should continue to do so, as refraining from disclosure will be considered a signal of unfavourable news by outsiders (ibid).

Consequently, all companies, no matter which kind of news they have, are strongly motivated to disclose information and compete successfully in the market (Ferrer, 2016). In the disclosure literature, many variables are considered based on signalling theory. For example, Oyelere et al. (2003) state that managers are using disclosure to signal their companies' profitability and industry differences. Similarly, Craven and Marston (1999) point out that companies try to adopt disclosure practices similar to those of other companies in the same industry, as else it may be conceived as a signal of bad news. Further, Aly et al. (2010) argue that companies with a high liquidity ratio tend to disclose more information to differentiate themselves from companies with a low liquidity ratio, while Ferrer (2016) explains that the increase in a company's leverage may indicate a negative signal to stakeholders. According to Craven and Marston (1999), adopting the internet as a means of disclosing information can be perceived by users as a signal of good quality and high performance. Therefore, managers may use internet disclosure to create or maintain a good image for their companies and also to keep up with other companies in the same industry. In Saudi Arabia, the Capital Market Authority (CMA) has aimed to improve transparency and disclosure and reduce information asymmetry (Al-Nodel and Hussainey, 2010) by imposing many regulations. In particular, there are the Listing Rules 2004 (CMA, 2013), which mandate that all listed companies provide the stock market with information regarding any substantial changes to the company in a timely manner. This has enhanced voluntary disclosure as a result of decreasing information asymmetry, thus, it may encourage investment decisions and reduce financing cost (Morris, 1987).

3.2.1.3 Stewardship theory

In contrast to agency theory, which proposes the presence of a conflict of interest between agents and principals (Donaldson and Davis, 1991), stewardship theory suggests that the interests of agents (managers) and principals (owners) are coincident. Basically, stewardship theory assumes a mutual trust between managers and owners and that there is no conflict of interest between them (Nicholson and Kiel, 2007). Davis et al. (1997) state that "stewardship theory defines situations in which managers are not motivated by individual goals, but rather are stewards whose motives are aligned with the objectives of their principals". Therefore, this theory supposes that managers are trustworthy (Letza et al., 2004) and, as such, they act in favour of maximizing the company's value and to increase the shareholders' interests instead of individual interests (Davis et al., 1997). Moreover, managers, according to this theory, are motivated by preserving a good reputation and achieving success in their future career; thus, to satisfy these needs, managers try to use the companies' resources in an efficient way to

increase shareholder welfares (Conyon and He, 2011). Besides, managers have access to information that is not available to shareholders, and because of the mutual interests, they will pass this superior information on to the shareholders, which may enhance the interests of the companies and their owners as well. One possible way to provide such information is by using the company's website to disclose the required information. Based on stewardship theory, Donaldson and Davis (1991) find a positive relationship between the chief executive officer (CEO) duality and shareholder returns, as suggested by stewardship theory, while Kiel and Nicholson (2003) report that larger boards are associated positively with firm performance measured by return on equity as posited by stewardship theory. Similarly, the study of Al-Janadi et al. (2013) find support for this theory, as their result showed that companies with CEO duality disclose more information than companies that separate the two positions. In the Saudi context, the Corporate Governance Code seeks to enhance the accountability of managers by improving management monitoring. In this regard, Article 12 requires that the majority members of the board of directors must be non-executive and that one third of them must be at least independent. Furthermore, the same article asserts that it is forbidden for the same person to hold the positions of CEO and chairman. Apparently, these regulations contradict the main assumption of stewardship theory, which postulates that managers are trustworthy and hence there is no need to extensively monitor their performance. However, as the level of family ownership is very high in Saudi Arabia and relatives are usually appointed as directors or executives, these directors are potentially to be regarded as trustworthy, which supports the assumptions of stewardship theory (Siebels and Knyphausen-Aufseb, 2012; Albassam, 2014).

3.2.1.4 Capital need theory

This theory proposes that the key incentive for disclosure is the constant need to obtain capital at the lowest possible cost. By disclosing more information, companies try to minimise investor uncertainty and information asymmetry, and hence risk, which results in reducing the required rate of return. When the investors have a lower rate of return, the company will have a lower cost of capital and a higher share price (Cooke, 1989a). The investors' needs for information operate as pressure on companies to increase the quantity and quality of the released information (Haniffa, 1999). Not disclosing information or hiding some information can be costly for the company and harm its competing abilities, as the current and potential investors may consider this company to be more risky than other companies that disclose more information and thus its cost of capital will be higher (Meek and Gray, 1989). According to

capital need theory, investors seek precise and timely information in order to reduce information asymmetry and make rational decisions regarding their investments. The availability of the required information in a timely manner can result in the reduction of the capital cost. Therefore, companies are motivated to disclose more timely information to their stakeholders to gain a lower cost of capital, which can be achieved by using the company's website to disclose the required information due to the widespread nature, ease and full speed features of the internet.

Several studies point out that companies can reduce the cost of capital by expanding the level of disclosure (e.g. Ashbaugh et al., 1999; Craven and Marston, 1999; Healy and Palepu, 2001; Verrecchia, 2001 and Oyelere et al., 2003). Capital need theory was used to explain the association between voluntary disclosure and different variables; for example, Debreceny et al. (2002) find that internet disclosure has increased in those companies that attempt to reduce the cost of capital through listing on foreign exchanges. Furthermore, Healy and Palepu (2001) indicate that managers who participate in capital market transactions are expected to provide voluntary disclosure to reduce information asymmetry and, hence, reduce the cost of capital. Watson et al. (2002) found that companies with a high leverage ratio are more likely to disclose more information to satisfy their debenture holders and trustees' needs. This disclosure is deemed to reduce investor uncertainty and thus reduce the cost of capital. In addition, Al-Htaybat (2005) suggests three main reasons to justify using capital need theory in explaining voluntary disclosure. First, companies need to raise capital at the lowest potential cost. Second, with a high level of disclosure, agency cost can be reduced and the company will be able to raise new capital, accordingly, in the most desirable way. Finally, investor uncertainty can be reduced by voluntarily disclosing more information, thus the required rate of return on investment will be reduced.

Although the economic approach theories are widely used, this approach has some limitations. First, it emphasises one main goal, namely maximising profit, and ignores other desirable goals. Also, this approach focuses on two parties of stakeholders – shareholders and managers – and neglects the other stakeholders such as government, creditors, employees and other consumer groups (Haniffa, 1999). Furthermore, Abdelsalam (1999) mentions the difficulties of applying economic-based theories in developing countries. These countries have different environmental features compared to developed countries, meaning that aspects of these theories, such as the assumption of an efficient capital market, may not be realizable in developing countries. Finally, it concentrates on the economic aspect and studies it in isolation

from other social, political and institutional domains which affect the economic actions (Gray et al.; 1995).

Because of the limitations of the economic approach, there has been a shift to the political economic approach, which considers the interaction of economic actions with politics, society and other institutions. The next section discusses the political economic approach in detail.

3.2.2 Political economic approach

The political economic approach emphasises the interaction of economic actions with politics, society and other institutions. That is, it deals with many environmental aspects of the society where the economic activities take place. Thus, this approach considers other stakeholders who have a contractual links with the company, such as government and society, and not only the contracts between shareholders and managers. This theory mainly recognizes the substantial effect of government on accounting practices and policies (Haniffa, 1999). Furthermore, it takes into consideration the existence of societal conflict as well as the potential influence of accounting reports on the distribution of wealth and power within the society (Cooper and Sherer, 1984). The main theories derived from the political economic approach are legitimacy theory, stakeholder theory and political costs theory; these are summarized in the following paragraphs.

3.2.2.1 Legitimacy theory

Legitimacy theory is based on the notion that management behaviour is influenced by many external environmental aspects (economic, social and political); therefore, all these factors should be considered, and not only those of shareholders, in order to legitimise management actions. That is, it is proposed that management has a social contract with the society in which it operates and, accordingly, the management must act within the acceptable value system of this society in order to be socially approved and to ensure that its activities are legitimized (Patten,1991; Rizk, 2006). Any potential conflict between the management and other parties of society may lead to threats to the legitimacy of the company and thus harm its credibility (Arafa, 2012). This theory provides an explanation of the incentives of managers for voluntary disclosure. One explanation is that managers may disclose more information voluntarily to avoid legal actions against them due to insufficient or untimely disclosure (Healy and Palepu, 2001). Another explanation is that managers' fear of litigation may potentially reduce their motivation to disclose information, specifically forward-looking information (ibid). Lindblom (1994) proposes that companies have four strategies to legitimise their actions; first, inform

their relevant stakeholders of any changes in performance or activities of the company; second, try to alter the views and perceptions of the relevant stakeholders without changing the company's actual behaviour; third, manipulate the perceptions of users by diverting their attention from the issues of concern to other related issues; and the final one, change the performance expectations of the company by external parties. According to Watson et al. (2002), two of Lindblom's strategies may be related to accounting ratios disclosure; disclosing information about accounting ratios can inform and educate users about changes in the performance (Lindblom's first strategy) and may also help divert users' attention away from other areas (Lindblom's third strategy). Legitimacy theory suggests that voluntary disclosure may vary with different firm characteristics, such as size, industry type, listing status and performance. For example, a study by Qu and Leung (2006) shows that Chinese listed companies have to provide voluntary information in addition to the required disclosure as a result of changes to the cultural and social norms in China. Moreover, both studies by Debreceny et al. (2002) and Oyelere et al. (2003) indicate that large companies are strongly motivated to increase voluntary disclosure to improve the company's reputation and public image, thus decreasing intervention by the government. Haniffa and Cook (2005) studied the impact of culture and corporate governance on social disclosure. The results revealed a significant association between boards dominated by executive directors, boards dominated by Malaysian directors, chairs with multiple directorships and foreign share ownership and social disclosure in Malaysian companies' reports. Furthermore, Ng and Koh (1994) state that profitable companies are believed to be subject to public scrutiny and thus tend to implement some self-regulation mechanisms, such as voluntary disclosure, to avoid more external regulation. Internet disclosure may be adopted as one form of such voluntary disclosure by companies who want to disclose more information via the internet to appear legitimate from the stakeholders' perspective.

3.2.2.2 Stakeholder theory

Stakeholders are defined as "any group or individual who can affect or is affected by the achievement of the organisation's objectives" (Freeman, 1984, P. 46). Alternatively, Clarkson (1995, P. 106) defines stakeholders as "persons or groups that have, or claim, ownership, rights, or interests in a corporation and its activities, past, present, or future. Such claimed rights or interests are the result of transactions with, or actions taken by, the corporation, and may be legal or moral, individual or collective". As such, stakeholder theory considers the relationship between managers and all other parties who have a stake in the firm, such as shareholders,

employees, creditors, customers, suppliers, and government. In contrast to agency theory, which concentrates on the relationship between managers and shareholders only, stakeholder theory has a broader perspective, whereby all stakeholders' interests are included and managers are accountable to various sectors of society (Solomon, 2007). Stakeholders can be categorized into two groups; the first is the primary stakeholder group, such as shareholders, investors, employees, suppliers and the government, who are vital for the company to survive and without their participation the company would be unable to continue in the long run. The second is secondary stakeholder group comprises those who influence or are influenced by the company. This group is not essential to the company's survival and is not involved in transactions with the company, such as the media and special interest groups (Clarkson, 1995; Rizk, 2006).

Moreover, Donaldson and Preston (1995) indicate that stakeholder theory can be used from three different aspects, namely descriptive, instrumental and normative. The descriptive aspect is when the theory is used to describe or explain certain characteristics or behaviours of the company, such as describing the nature of the company or how some companies are managed. From the instrumental aspect, theory is used to define the connections between stakeholder management and the achievement of corporate goals, such as growth and profitability. Finally, the normative aspect uses the theory to interpret the function of the company, including the identification of ethical and moral guidelines for management and operations. Although these three aspects of the stakeholder theory are interrelated, they are distinct and their implications are different.

However, this theory encounters some criticisms (Sternberg, 1997). One of the criticisms is that the theory's main assumption conflicts with the basic objective of companies, which is maximizing the benefits to shareholders. Further, this theory assumes that companies must be accountable to all the stakeholders instead of being accountable to their shareholders, and this is against the agent-principal relationship. Moreover, the balance of all stakeholder benefits is an unworkable objective and no guidance is available. To refute these criticisms, Turnbull (1997) asserts that much empirical evidence does not support the view that there is a conflict with either the company's objective or the agent-principal relationship under stakeholder theory. Besides, stakeholder relationships can protect and legitimate the concept of agency and shareholder interests and not weaken them.

Stakeholders theory implies that the company should protect the interests of different stakeholders who have different needs. This forces the company to balance between these conflicted interests by disclosing more information voluntarily (Collier, 2008). By voluntarily disclosing certain information, managers can interconnect with stakeholders to obtain their

assurance and support regarding the company's performance (Gray et al., 1995; Watson et al, 2002). In order to satisfy the different needs of stakeholders, companies can communicate with their stakeholders and gain competitive advantage by using the internet as an easy and wide-spread channel of information dissemination (Bolivar and Garcia, 2004). Moreover, to achieve a high level of transparency that satisfies stakeholders' expectations, companies should pay attention to the links between their activities, society, the environment and technology. Adopting internet can help in acquiring such links (Ahmed and Hardaker, 1999). In addition, internet technology offers an interactive communication channel between a company and its stakeholders, provides timely updates of information, and allows the retrieval of certain information that suits the needs of all users (Shepherd et al., 2001). However, managers should be aware of the impact of powerful stakeholders on the disclosure decision as well as consider the information cost and competition effect when adopting different disclosure types to satisfy different stakeholder needs (Gray et al., 1995) and particularly in the implementing and developing of internet disclosure practices. As suggested by Rizk (2006), stakeholder theory may be applicable in developing countries, highly regulated industries and transitional economies. Furthermore, Haniffa (1999) indicated that the most important implication of this theory is the increasing interest in social reporting and the cultural perspective in accounting practice. In Saudi Arabia, the code of corporate governance in its Articles 1 and 10 mentions the rights of stakeholders and provides some articles to protect their rights, while asserting the social responsibility of the companies. Thus, Saudi listed companies are expected to consider the interests of all stakeholders and not only their shareholders. In addition, as all Saudi companies should pay Zakat, it can be assumed that these companies are committed to their social responsibilities (Albassam, 2014). However, applying stakeholder theory effectively in the Saudi context may encounter some obstacles due to the fact that compliance with the code is voluntary and not compulsory, which means that Saudi companies with highly concentrated family and government ownerships may neglect stakeholder interests for the sake of the interests of their shareholders (ibid).

3.2.2.3 Political costs theory

The political costs theory is based on the notion that political bodies (e. g. government and tax organizations) have the power to influence the redistribution of the companies' wealth (Watts and Zimmerman, 1978, 1990). This theory perceives the effect of government and other political bodies on determining accounting reports and policies and setting disclosure regulation (Sterling, 1974), which may be attributed to many reasons. First, it helps to both

protect the public and prevent or limit fraud and scandals as much as possible. Additionally, it enhances resources allocation in the economy by reducing costs to investors regarding rational decision-making process (Haniffa, 1999). Furthermore, it permits the availability of the information to anyone who is interested in obtaining such information (Benston, 1976). Finally, the government involvement in disclosure regulation provides the required information for national economic planning and control (Gray et al., 1984). It is assumed that political process generates costs for corporations and, thus, managers will adopt some procedures that alleviate this potential political cost, such as adopting accounting policies and government lobbying (Watts and Zimmerman, 1978, 1990). Therefore, several studies use political costs theory to explain the incentives of managers to voluntarily disclose information, such as Cooke (1989b), Al- Modahki (1995) and Milne (2002). Moreover, it can be stated that companies may alter accounting information as a response to changes in expected political costs (Cahan, 1992) and that they may disclose more information to mitigate adverse political actions in the form of regulation by government and tax institutions or claims by other political groups (Gray and Roberts, 1989). However, political costs theory has been implied to explain the relationship between size and disclosure practice; that is, large companies are subject to higher tax rates, which increase their political costs and, hence, they are more likely to disclose voluntary information to decrease these political costs (Al-Hatybat, 2005). Other studies argue that industry sensitivity may be more related to political costs than size. For example, they reveal that companies in the oil and gas industry tend to disclose more information in order to avoid further regulation that may increase their political costs (Ghazali, 2004). Since Saudi listed companies are more exposed to the government and public concerns, they are expected to disclose more information to satisfy all users and avoid increasing their political costs. That is, these companies may provide more information voluntarily to limit government intervention and may use the internet as a tool to disseminate this required information.

Although many researchers in the disclosure literature have used various theories to explain disclosure practice, others choose to rely on cost benefit analysis to justify disclosure decisions. Producing accounting information has its related costs as well as its expected benefits. Thus, the cost benefit approach considers these costs and benefits in addressing disclosure practice. The cost benefit analysis approach will be discussed in the following section.

3.2.3 Cost benefit analysis approach

Basically, the cost benefit approach concerns the weighing of benefits of any decision taken by the company against its costs. Since disclosure practice involves some costs, companies

generally aim to ensure that the additional costs resulting from disclosing more information do not exceed the expected benefits of such a disclosure (Gray et al., 1984). The main theory derived from the cost benefit approach is information costs theory, which will be reviewed in the next section in detail.

3.2.3.1 Information costs theory

Information costs theory is used by many researchers to explain disclosure practice. It is assumed that companies are motivated to disclose more information voluntarily if the potential benefits exceed the estimated costs (Cooke, 1992). However, it is worth mentioning that it is difficult to identify or measure the benefits and costs of disclosure, which makes quantifying the influence of disclosure very hard. Furthermore, determining changes in behaviour that arise from disclosure in isolation from other influences is a problematic issue (Gray et al., 1984).

In general, two types of disclosure costs can be identified, that is, direct and indirect costs (Mautz and May,1978). The direct costs of disclosure include the expended resources to gather, process, manage, monitor, develop, audit and distribute information (Cooke, 1992). According to Watts and Zimmerman (1990), disclosing information to all users involves contracting costs, which consist of transaction costs, agency costs, information costs, renegotiation costs and bankruptcy costs. However, the direct cost of disclosure may be affected by many factors; such as the internal organizational structure, where a more complex structure usually leads to high disclosure costs and vice versa. Additionally, the optimal harmony between the internal and external information needs helps to decrease the costs of disclosure when gathering information (Gray et al., 1984). Also, the advances in information technology contribute to low costs of disclosing information, encouraging companies to provide more information (Elliot and Jacobson, 1994). It is suggested that the direct costs of disclosure are more significant in developing countries than in developed countries (Rutherford and Abu-Nassar, 1995). On the other hand, two types of costs represent the indirect costs of disclosure, namely litigation and competitive disadvantage costs. Litigation costs occur as a result of legal actions taken by users who perceive the disclosure to be misleading or insufficient (Elliot and Jacobson, 1994). Thus, companies tend to disclose the required information to prevent or mitigate such litigation costs. Many researchers use litigation costs to explain disclosure practice. For example, Skinner (1994) states that managers have incentives to disclose even bad news voluntarily to their stakeholders to avoid rising potential litigation costs, while Francis et al. (1994) find that voluntary disclosure may not be a powerful protection, as advocated, against future litigation costs.

Further indirect disclosure costs are those related to competitive disadvantage, that is, using additional disclosed information by competitors in a way that is harmful to the disclosing company and taking advantage on the account of the company (Verrecchia, 1983). Moreover, Beaver (1998, P.164) mentions that competitive disadvantage is "creating a disincentive to innovate or invest in product development" via disclosure such as technological skills, production techniques, advertising plans, copyrights and patents (Mautz and May, 1978). Furthermore, it is expected that competitive disadvantage costs of disclosure may increase depending on a number of reasons such as the timing of disclosure, highly competitive industries and a high level of specific details disclosed (ibid). The indirect costs of disclosure are claimed to be more important than that direct costs in developed countries (Gray and Roberts, 1989).

Obviously, there is a variety of benefits that companies may acquire from disclosure. One of the main benefits of disclosure is reducing the uncertainty regarding financial performance and the future expectations of companies. Other disclosure benefits include enhanced decision-making processes regarding resource allocation, improving share marketability, raising new capital at lower cost, lowering agency and political cost and enhancing the image of the company (see: Mautz and May, 1978; Gray and Roberts, 1989; Haniffa, 1999). Many studies address the benefits of disclosure; for example, Eccles and Mavrinac (1995) investigated the benefits of disclosure from the perception of three groups of investors /shareholders, corporate managers and financial analysts. The increase in management credibility was ranked as the most important benefit derived from improved disclosure by all the three groups. However, other benefits were ranked differently by the three groups, except improved relations with supplier and reduced regulatory intervention, which received the lowest ranking from the three groups. Similarly, Elliot and Jacobson (1994) examined the costs and benefits of disclosure from the view of three interest groups, namely entity's interest, non-owner investors' interest and national interest. The results revealed that improved disclosure is the best interest of the national group and that they can gain many benefits compared to the other groups, while costs are only recognized by entity's interest. Gray and Roberts (1989) empirically rank the constraints and benefits of voluntary disclosure. They find that the first rank of benefits is the improved image and reputation of company, while cost of competitive disadvantage is in the first rank of constraints. Furthermore, in the study of Vlachos (2001), disclosure benefits were classified into two types: internal and external benefits. Internal benefits include reducing company costs, which are cost of capital, agency cost and political costs, other benefits include improving the company's image and reputation, stabilising the share price and assuring the

company's ability to meet its obligations, while the external benefits involve an efficient capital market, a high level of investment, and the improved liquidity of the capital market. It can be noted that most of the studies agree regarding the main disclosure benefits but vary regarding the ranking of these benefits. The variation may be attributed to the differences in the participants or the economic environments where the studies took place.

Regarding internet reporting as a type of disclosure, many researchers point out the benefits that companies can acquire from using the internet to disclose information to their users. By disclosing information on the internet, the company can gain a reduction in the cost of preparing and disseminating paper-based reports. Besides, providing internet reports enhances the accessibility of the required information and meets users' specific needs through facilitating the use of hyperlinks, search tools and other interactive means (Oyelere et al., 2003). Also, Elliot and Jacobson (1994) indicate that the advances in information technology have contributed significantly to reducing the cost of disclosure, which encourages companies to disclose more information via their websites. In summary, it is expected that companies will create a balance between costs and benefits when disclosing information on the internet. That is, companies will develop, manage and maintain their websites according to the information cost theory.

In order to meet the stakeholders' needs for information in a timely manner, using an appropriate format and with easy access, companies should adopt an adequate means of disclosure to satisfy all users. Applying the innovation adoption approach may help to justify the use of internet disclosure. The next section presents this approach in more detail.

3.2.4 Innovation adoption approach

Innovation, as defined by Rogers (1995), is "a practice, idea, or object perceived as new by an individual or entity". The technology adoption theories can explain the attitudes and behaviour of users regarding emerging innovative technologies in addition to their motivation to utilise such technologies in business. Therefore, adopting internet technology to disclose information on a company's website may represent an innovation for the company that is using internet reporting. Some previous studies have found that there are many organisational aspects (e.g. technological knowledge resources and infrastructure) affecting the adoption of the business process reengineering innovation (Grover et al., 1999; O'Donnell, 2003). Moreover, Mehrtens et al. (2001) points out that there is a lack of studies that identify the organisational justification for internet adoption. In their study of voluntary innovation adoption, Tolbert and Zucker (1983) indicate that adopting innovation in its early stages can be predicted using some

organizational characteristics proposed by economics-based analyses, however the later stages appear to be determined more by legitimacy concerns emerging from growing institutionalisation. In particular, Abrahamson (1991) identifies three ways of innovation change. First, forced implementation, where a company is forced to adopt an innovation by powerful external bodies, such as the government, regardless of the expected benefits to the company. Second, the fashion perspective is when the company tends to imitate leading-edge organizations, which can strongly attract companies to adopt an innovation. Third, the fad perspective relates to companies trying to follow former adopters in the same business because of low uncertainty about the innovation or to show their legitimateness by conforming to up-to-date norms. Jeyaraj et al. (2006) examined a number of studies dealing with information technology adoption and noted that the technology acceptance model (TAM) and diffusion of innovations (DoI) theory are commonly used in justifying the adoption of information technology. The following paragraphs highlight the main points under both of these two theories.

3.2.4..1 Technology acceptance model

As mentioned previously, the technology acceptance model (TAM) is one of the most widely used models to explain technology adoption. Initially, it was developed to validate and predict behaviour related to the use of computers or other relevant technologies (Davis, 1989). This model suggests that the adoption of any information system depends on two determinants: perceived usefulness and perceived ease of use (ibid). Perceived usefulness means the degree to which the potential user of an information system believes that he or she will gain some benefits from this system and improve his or her performance accordingly. Perceived ease of use is the extent to which the user perceives that using a certain information system will be free of effort. Since information technology systems are becoming increasingly complex and necessary at the same time, users tend to accept the easier-to-use system if all else is equal (ibid). Many studies have been conducted to discuss the adoption of information technology systems (Al-Gahtani, 2001; Chan and Lu, 2004; Kim and Malhotra, 2005; Lundmark et al., 2008; Cresswell et al., 2013; Chen and Kamal, 2016 and Molinillo and Japutra, 2017). Lee et al. (2008) conducted a study to determine the different factors that influence the use of financial websites to acquire the required information by investors. Using the TAM, the results reveal that technical convenience and consistency affect the perceived ease of use, while information quality, investment information and decision quality influence perceived usefulness. Perceived usefulness to the individual investor is mostly influenced by decision quality, whereas

perceived ease of use is affected by both consistency and technical convenience. Furthermore, Pinsker (2008) used the TAM and absorptive capacity to study XBRL adoption by managers (as the continuous disclosure technology example). The findings showed that participants perceive the benefits of XBRL adoption in terms of being easy to learn (absorptive capacity), its usefulness (TAM) and creating positive attitudes of participants toward technology in general (TAM). Recently, Diatmika et al. (2016) examined the factors that affect individual intentions to accept the Accounting Information System (AIS) based on information technology (IT). The model of this study is a combination of the TAM, theory of planned behaviour, innovation diffusion theory, task technology fit and self-efficacy theory. They concluded that perceived usefulness, subjective norm, task technology fit and self-efficacy have an effect on behavioural intention. On the other hand, ease of use, perceived behavioural control and personal innovativeness in IT have no influence on behavioural intention. Thus, the TAM is applicable to the internet reporting context as the management use of the internet to disclose information is driven by the perceived benefits and the ability to use such an innovation.

3.2.4.2 Diffusion of innovation theory

Rogers (1995) defines innovation diffusion as "a process by which an innovation is communicated, adopted and spread among members of a social system". Innovation diffusion theory explains and describes how a new invention is implemented and becomes successful within cultures (Clarke, 1999). Rogers (2003) identifies five characteristics that influence the rate of innovation adoption: (1) relative advantage, that is, a new innovation is more likely to be adopted if it has a relatively higher advantage than the idea it supersedes; (2) compatibility of an innovation with existing values, past experiences and the needs of potential adopters, which makes it easier to adopt; (3) complexity, meaning that the more the innovation is simple and easy to understand, the more rapidly it will be adopted; (4) trialability, that is, how easily an innovation can be experimented with, because hard to use and try innovations are less likely to be adopted; and (5) observability, that is, the extent to which the results of an innovation are visible to others, whereby easily observed innovations may be adopted faster. The diffusion of innovation theory has been used by many researchers in explaining the adoption of information technology. For example, Wejnert (2002) provides a conceptual framework of the variables used in diffusion research to demonstrate their impact on the decision regarding innovation adoption. These variables are classified into three major groups: the characteristics of the innovation itself, the characteristics of the adopters, and characteristics of the environment

concerning geographical settings, societal culture, political conditions and global uniformity. He concludes that there is a great need to incorporate some factors in diffusion research, namely the interactive character of diffusion variables, the gating function of diffusion variables, and the effects of the adopter's characteristics on the temporal rate of diffusion. Chircu and Kauffman (2000) outline some barriers that companies face in adopting information technology. One of these are the organisational barriers, which relate to the valuation of the information technology process, and the other are user barriers, which relate to the conversion from the present situation to a new one. Xiao et al. (2004) tried to explain internet reporting decisions in Chinese companies using innovation diffusion theory. They state that both economic-based and diffusion of innovation theories can be used to supplement each other and improve the understanding of internet reporting practices. Diffusion of innovation theory has been applied to develop hypotheses about the relationship between internet reporting practices and some variables, such as auditor type, foreign ownership and industry type.

Based on the above discussion, the rate of adoption of internet reporting by Saudi listed companies depends on how they perceive its relative advantage, compatibility, trialability, observability and complexity. That is, if these companies observe the benefits of internet disclosure and they have the required tools and facilities, then they will adopt this innovation, while taking its trialability and complexity into consideration. For example, a company may choose to use HTML, PDF or XBRL in presenting its internet reporting, based on their perceived trialability and complexity.

3.3. Hypothese formulation

To formulate testable hypotheses, four groups of independent variables are used as possible explanatory variables of CIR practices. These groups are: firm characteristics variables (7 variables) and variables related to corporate governance; board of directors (4 variables), ownership structure (4 variables) and audit committee (3 variables). The main hypotheses related to the independent variables are:

H1: There is a significant relationship between firm characteristics variables and corporate internet reporting (total, content, presentation, timeliness, usability and audit) by Saudi listed companies.

H2: There is a significant relationship between board of directors variables and corporate internet reporting (total, content, presentation, timeliness, usability and audit) by Saudi listed companies.

H3: There is a significant relationship between ownership structure variables and corporate internet reporting (total, content, presentation, timeliness, usability and audit) by Saudi listed companies.

H4: There is a significant relationship between audit committee variables and corporate internet reporting (total, content, presentation, timeliness, usability and audit) by Saudi listed companies.

Next sections present the hypotheses related to firm characteristics variables and corporate governance variables.

3.3.1 Firm characteristic variables

The impact of firm characteristics on the extent of disclosure has been extensively investigated in the prior disclosure studies. Thus, seven variables related to firm characteristics and the generated hypotheses are discussed below.

3.3.1.1. Firm size

Firm size is one of the most common and important variables influencing disclosure practices. Many theories are used to explain the relationship between firm size and voluntary internet disclosure. Based on agency theory, the conflict between owners and management leads to information asymmetry, which increases the agency costs such as monitoring costs. Voluntary reporting of more information on the company's website can help to reduce monitoring costs and alleviate this conflict. However, as the cost of voluntary disclosure may be very high, large companies are more likely to adopt it. Furthermore, large companies generally have a variety of products and more complex information systems, which may cause their disclosure costs to be lower than those of small companies (Oyelere et al., 2003). However, legitimacy theory assumes that managers of large companies are greatly motivated to disclose more information on their websites (e.g. Watts and Zimmerman, 1986; Lang and Lundholm, 1993; Gray et al., 1995; Debreceny et al., 2002; Ettredge et al., 2002a; Oyelere et al., 2003). One explanation is that managers expect that disclosing more information voluntarily will reduce the possibility of legal action against them due to untimely or inadequate disclosure and will protect the company's credibility (Healy and Palepu, 2001). Further, Debreceny et al. (2002) reveal that large companies are subject to more interest from public and regulatory bodies, which motivates managers to enhance the companies' reputation and public image by disclosing more information. According to cost benefit theory, large companies may have incentives to disclose more information voluntarily on their websites as they have the required resources for

disclosure and can benefit from reducing the cost per unit for disclosed information due to their large-volume products, whereas small companies are unable to afford the high costs needed to collect, present and disseminate information online (Lang and Lundholm, 1993; Haniffa, 1999). Empirical evidence from the literature reveals that size is a significant explanatory variable and has a positive association with the extent of disclosure in both developed and developing countries, both for hard copy reporting (e.g. Cooke, 1992; Wallace et al., 1994; Al-Modahki, 1995; Al-Mulhem, 1997; Al-Razeen and Karbhari, 2004) and internet reporting (e.g. Ashbaugh et al., 1999; Hassan et al., 1999; Ettredge et al., 2001; Debreceny et al., 2002; Marston, 2003; Oyelere et al., 2003; Xiao et al., 2004; Bollen et al., 2006; Kelton and Yang, 2008; Desoky, 2009; Arafa, 2012; Kamalluarifin, 2016; Ahmed et al., 2017; Dolinšek and Lutar-Skerbinjek, 2018).

Several proxies of company size were used in previous studies, such as total assets (Ashbaugh et al., 1999; Ismail, 2002, Al-Motrafi, 2008; Dolinšek and Lutar-Skerbinjek, 2018), total sales (Haniffa, 1999; Aly, 2008; Kamalluarifin, 2016), turnover (Craven and Marston, 1999; Dolinšek and Lutar-Skerbinjek, 2018), market capitalization (Ettredge et al., 2002a; Bollen et al., 2006, Desoky, 2009), natural log of total assets (Beasley et al., 2000; Davidson et al., 2005; Abdelsalam et al., 2007; Al-Shetwi et al., 2011; Kamel and Shahwan, 2014; Albassam et al., 2015; Ahmed et al., 2017) and average number of employees (Dolinšek and Lutar-Skerbinjek, 2018). However, no dominant theory or criterion is provided in the disclosure literature to select among these different proxies. As such, in the present study company size is measured using the natural log of total assets.

Consistent with many internet disclosure studies that found that size has a significant and positive association with internet reporting, it can be presumed that company size may have the same impact on CIR in the Saudi context. Thus, the first hypothesis is:

H1.1 There is a positive relationship between firm size and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.1.2 Firm growth

Companies with high growth rate may have reasons to disclose more information in their websites than other companies. Based on agency theory, high-growth companies may have higher information asymmetry and agency costs, and thus have more incentive to alleviate the asymmetry problem by disclosing voluntary information through additional means such as internet reporting (Debreceny et al., 2002). Furthermore, the high growth effects may not be effectively transferred to investors using traditional accounting disclosures, hence these

companies tend to use the internet to communicate more suitable information to their investors (Bollen et al., 2006). The growth of a company usually requires more capital; therefore, high growth companies consider disclosing more information to obtain their requirements regarding external capital. In addition, these high-growth companies have a great incentive to increase voluntary disclosure to enhance their reputation and attract potential investors (Eng and Mak, 2003). On the other hand, an opposing view suggests that firm growth is negatively associated with corporate disclosure. This negative association could be attributed to the high competitive costs for high-growth companies when increasing voluntary disclosure (Debreceny et al., 2002). Another explanation is that fast growing companies are subject to extensive exposure by analysts and media followings and other means, and hence the required level of disclosure may be lower (ibid). Further, the growing companies need to allocate most of their resources to manage their growing activities and, as such, they may lack the required financial and human resources to invest in developing their websites (Bollen et al., 2006).

The existing empirical studies provide inconclusive results of the relationship between firm growth and disclosure. While some studies find this relationship to be significant (e.g. Debreceny et al., 2002; Bollen et al., 2006; Abdelsalam et al., 2007; La Rosa and Liberatore, 2014; Ahmed, 2015), other studies (e.g. McNally et al., 1982; Eng and Mak, 2003; Ronnie Lo, 2009; Habbash, 2010; Arafa, 2012; Albassam, 2014) find no significant relationship between firm growth and voluntary disclosure. Different measures were used as proxies for firm growth, such as market to book ratio, growth in total assets, capital expenditure and growth of sales. In this study, growth is measured by the growth of sales, which is calculated as the increase in total sales in percentage over the total sales in the previous fiscal year: $(\frac{\text{Total Sales in fiscal year } n - \text{Total Sales in fiscal year } (n-1)] \text{ x100}}{\text{Total Sales in fiscal year } (n-1)})$.

Based on the inconclusive findings on the relationship between firm growth and internet disclosure, it can be assumed that:

H1.2 There is a significant relationship between firm growth and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.1.3 Leverage

Leverage is a financial risk measure which shows the ability of the company to meet its obligations. Based on agency theory, high debts can create agency costs. That is, the conflict between debtholders and shareholders may increase the monitoring costs. By disclosing more

information, management can mitigate this conflict and reduce monitoring costs. Voluntary disclosure can also enhance transparency and help to assure debtholders about the company's ability to meet its obligations (Jensen and Meckling, 1976). Thus, highly leveraged companies may use internet voluntary disclosure as a means to lower their cost of debt and allow debtors to constantly monitor the company's affairs, which may lead to a reduction in agency costs (Debreceny et al., 2002). As such, a positive relationship is expected between leverage and internet voluntary disclosure. In contrast, some researchers argue that leverage may affect internet reporting negatively, whereby high leverage is more likely to decrease equity agency costs by creating more debt, which results in reducing total equity financing (Bollen et al., 2006). In addition, debtholders of high-leverage companies may not depend mainly on internet reporting because they are more likely to acquire information through alternative communication channels (private channels), whereas companies with lower debt and higher equity percentage may disclose more information on their website to satisfy investor demand (ibid).

Prior studies that examine the relationship between leverage and voluntary disclosure find mixed results. While some studies find a positive association (e.g. Ettredge et al., 2002a; Ismail, 2002; Xiao et al., 2004; Al-Saeed, 2006b; Barako et al., 2006; Alshowaiman, 2008; Elsayed, 2010; Omar and Simon, 2011; Kamalluarifin, 2016; Ahmed et al., 2017), other studies find a negative association (e.g. Eng and Mak, 2003). However, many other studies find no influence of leverage on internet disclosure (e.g. Debreceny et al., 2002; Oyelere et al., 2003; Bollen et al., 2006; Abdelsalam and Street, 2007; Wang et al., 2008; Aly et al., 2010; Samaha et al., 2012). Following prior research (e.g. Debreceny et al., 2002; Haniffa and Cooke, 2002; Xiao et al., 2004; Kamalluarifin, 2016), leverage in this study is measured using the debt ratio (total debts/total assets). Because of the inconsistent findings, it is proposed that:

H1.3 There is a significant relationship between leverage and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.1.4 Liquidity

Liquidity refers to the ability of a company to meet its current financial obligations. Based on signalling theory, it is expected that companies with high liquidity may have the incentive to voluntarily disclose more information to signal their ability to fulfil their current liabilities (Wallace and Naser, 1995) and to distinguish themselves from those companies that have liquidity problems. Furthermore, the use of the internet to provide more information is

motivated by the concerns of different users, such as investors, creditors and regulators, regarding the company's going concern and its ability to cover all its short-term liabilities (Wallace and Naser, 1995). However, agency theory suggests that weak-liquidity companies are more likely to increase the level of voluntary disclosure to satisfy the needs of their shareholders and investors, while high-liquidity companies may assume the satisfaction of investors, whereby there is no need for further information (Wallace et al. 1994). Many prior disclosure studies examine the association between liquidity and disclosure; however, the findings are conflicted. Some researchers report a positive association between liquidity and voluntary disclosure, such as Oyelere et al. (2003), Al-Moataz and Hussainey (2012), Elshandidy et al., (2013) and Ahmed (2015), while Wallace et al. (1994) and Ahmed et al. (2017) confirm a negative association. Other studies (Abdelsalam, 1999; Wallace and Naser, 1995; Al-Saeed, 2006b; Barako et al., 2006; Abdel-Fattah, 2008; Aly et al., 2010; Elzahar and Hussainey, 2012) find no relationship between liquidity and disclosure. In this study, liquidity is measured as the ratio of current assets over current liabilities. These arguments lead to the following hypothesis:

H1.4 There is a significant relationship between liquidity and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.1.5 Dividends

Dividends provide the required information to public investors regarding the amount and timing of future cash flows (Miller and Rock, 1985). Dividends is one of the ways that companies can communicate with the market about their future performance. Also, the payment of dividends is an indicator of the quality of protection which the company provides to its external investors (Hussainey and Walker, 2009). Both agency and signalling theories suggest that high-dividends companies may disclose more information. According to agency theory, there is a conflict of interest between managers and shareholders regarding dividends policy (Brudney, 1980). Therefore, to mitigate this conflict, managers are motivated to disclose more information to justify the compensation payment (Ntim and Soobaroyen, 2013) and to demonstrate the financial ability of the company and its contribution to society (Ntim et al., 2012), while signalling theory assumes that managers of companies with high dividends try to signal institutional confidence and attract investors using voluntary disclosure (Haniffa and Cooke, 2002). However, other researchers argue that dividends and disclosure provide considerably related information. Thus, dividends may substitute other means of disclosure,

particularly in less developed capital markets (Previts and Bricker, 1994). As such, companies that pay dividends may tend to reduce the level of voluntary disclosure (Archambault and Archambault, 2003). Several studies examine the relationship between dividends and disclosure (e.g. Brudney, 1980; Archambault and Archambault, 2003; Hussainey and Walker, 2009; Adjaoud and Ben-Amar, 2010; Albassam, 2014). The findings of these studies are inconclusive; while some researchers report a positive relationship (e.g. Archambault and Archambault, 2003; Adjaoud and Ben-Amar, 2010), others find an insignificant negative association (e.g. Albassam, 2014). Based on these arguments, the following hypothesis can be formulated regarding the association between dividends and corporate internet disclosure, whereby dividends are measured by a dummy variable coded 1 if a company paid dividends during the financial year, and 0 otherwise:

H1.5 There is a significant relationship between dividends and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.1.6 Industry type

Disclosure levels may vary based on industry type. The impact of industry type on the extent of disclosure has been examined in many disclosure studies using political cost theory and signalling theory to explain this relationship. According to political cost theory, companies in certain industries face political pressure to disclose specific types of information to mitigate the associated political costs (Oyelere et al., 2003). Moreover, some companies have social responsibilities that should be considered, which may lead to additional political costs such as deforestation and pollution; therefore, they tend to disclose more information in order to reduce these costs (Haniffa, 1999). However, signalling theory suggests that companies in the same industry are more likely to adopt similar disclosure practices. If a company within an industry fails to keep up with others from the same industry, it may be interpreted by the market as a signal indicating bad news (Craven and Marston, 1999). Presumably, companies in the same industry tend to adopt the same disclosure practice of leading companies, including internet disclosure Cooke (1991). The relation between industry type and disclosure extent has been investigated in many previous studies, yet, mixed results are reported. While some studies find a significant association (e.g. Debreceny et al., 2002; Ismail, 2002; Oyelere et al., 2003; Bollen et al., 2006; Alshowaiman, 2008; Ezat and El-Masry, 2008; Hassan et al., 2009; Aly et al., 2010; Ahmed et al., 2017; Dolinšek and Lutar-Skerbinjek, 2018), other studies find no relationship between industry type and internet disclosure (e.g. Wallace et al., 1994; Craven

and Marston, 1999; Eng and Mak, 2003; Akhtaruddin, 2005; Al-Motrafi, 2008; Desoky, 2009). These different results may be attributed to the different industry classifications used in prior research (e.g. financial or non-financial, IT industry or other industries). In addition, differences in aspects such as capital structure, size and ownership structure may affect the association between industry type and disclosure (Hussainey and Al-Nodel, 2008). Also, some companies in certain industries are subject to additional regulations, such as in oil and gas, which require them to disclose more information to the interested parties (Arcay and Vazquez, 2005). The current study uses financial and non-financial as a classification for Saudi listed companies. The rationale for choosing this classification is that the financial sector is one of the most important industries in the Saudi market because of its leading role in most financial and commercial activities. Further, the financial industry is the only one that is regulated and supervised by both the Saudi Arabian Monetary Agency and the Saudi Capital Market Authority. Usually, financial companies have more internet experience; for example, banks have an internet banking system that provides quick and secure services for their customers online. Because of this expertise, it is assumed that financial companies are more likely to adopt internet disclosure. Industry type is measured by a dummy variable coded "1" if the company is financial and "0" otherwise. Based on these discussions, the following hypothesis can be stated:

H1.6 There is a significant relationship between industry type and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.1.7 Audit type

There are two types of audit firms; large firms (the Big4) that are broadly spread and small firms (i.e. other than the Big4) that operate locally. It is assumed that audit firms can affect the level and quality of disclosure. Based on signalling theory, large audit companies need to preserve their good reputation and thus have the incentive to require high quality disclosure. Therefore, the engagement of a Big4 company is a signal of the effectiveness of the audit process and the reliability of the disclosed information (Healy and Palepu, 2001; Xiao et al., 2004). Moreover, these large audit companies have more experience and special skills, so they can influence companies to disclose more information (Wallace et al., 1994). In the same vein, agency theory suggests that auditing can help in mitigating the conflict of interest between management and investors. Generally, large audit companies are more concerned about their reputation, hence they are highly motivated to maintain their independence and to require high

quality disclosure practices, encouraging management with the higher number of possible benefits that can be obtained from external monitoring to hire them (Xiao et al., 2004). In contrast, small audit companies lack the ability to impose high levels of disclosure on their clients because they need to satisfy their clients' needs in order to be reappointed (Wallace and Naser, 1995). Furthermore, innovation diffusion theory suggests that the large audit companies are more likely to support the diffusion of innovative practices, such as using the internet to disclose more information. That is, reputable audit companies can protect their clients against uncertainty with online disclosure and assist them in implementing internet disclosure (Xiao et al., 2004). The findings of the empirical studies that examine the relationship between audit type and voluntary disclosure are ambiguous. Xiao et al. (2004) find that companies audited by big audit companies tend to increase internet reporting. This positive association has been also documented by (Trabelsi and Labelle, 2006; Al-Shammari, 2007; Al-Motrafi, 2008; Kelton and Yang, 2008; Ahmed et al., 2017). Other studies conclude that audit type has no significant impact on the decision to disclose information (Wallace et al., 1994; Eng and Mak, 2003; Al-Saeed, 2006b; Al-Shammari and Al-Sultan, 2010; Aly et al., 2010). However, Wallace and Naser (1995) indicate a significant and negative association between audit type and the disclosure level. Consequently, audit type is measured in this study by dummy variable coded "1" if the company audited by one of the Big4 audit companies (Ernst & Young, Price Waterhouse &Coopers PwC, KPMG and Deloitte) or "0" otherwise. All the above arguments lead to the following hypothesis:

H1.7 There is a significant relationship between audit type and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2 Corporate governance variables

The literature on voluntary disclosure shows that it is affected by corporate governance characteristics. Corporate governance helps to assure the accuracy of the disclosed information and manages the relationship between management, board of directors and shareholders. It is suggested that board characteristics, ownership structure and audit committee characteristics represent the main factors that influence the level and quality of voluntary disclosure (Haniffa and Cooke, 2002; Eng and Mak, 2003; Xiao et al., 2004; Cheng and Courtenay, 2006; Abdelsalam et al., 2007; Huafang and Jianguo, 2007; Hussainey and Al-Nodel, 2008; Kelton and Yang, 2008; Al-Shetwi et al., 2011; Samaha et al., 2015). Although many studies conducted in developed countries have examined the relationship between corporate

governance and voluntary disclosure, a limited number of studies have been done on developing countries. Therefore, this study contributes to the corporate governance literature on developing countries by exploring the impact of corporate governance on voluntary disclosure in Saudi Arabia. In line with previous studies, the current study employs three main sets of variables as corporate governance explanatory variables: board characteristics, ownership structure and audit committee. The board of directors' characteristics variables include board size, board independence, board frequency of meeting and role duality. The ownership structure variables consist of four types of ownership: block ownership, director ownership, institutional ownership and government ownership and, finally, the audit committee variables are: audit committee size, audit committee frequency of meeting and audit committee independence. The following sections discuss these variables in detail.

3.3.2.1 Board variables
3.3.2.1.1 Board size

Board size refers to the total number of directors on a board (Panasian et al., 2003). According to agency theory, the board of directors is assigned to represent shareholders' interests and thus is expected to provide a high level of disclosure (Davidson et al., 1996). Agency theory suggests that board size is an influential aspect in monitoring management performance, and increasing managerial monitoring can increase the level of voluntary disclosure (Ntim and Soobaroyen, 2013). Therefore, a large board can provide more proficiency in monitoring and controlling the diverse and huge activities of large companies with less conflict. Some researchers claim that a large board may result in greater expertise and diversity of knowledge, which can improve the disclosure quality. In addition, the percentage of independent directors is more likely to increase in larger boards, which leads to an increase in the level of voluntary disclosure. Furthermore, large boards can help in mitigate CEO dominance and preserve shareholder interests (Yermack, 1996; Mak and Roush, 2000; Singh et al., 2004; Abdel-Fattah, 2008; Al-Motrafi, 2008; Akhtaruddin et al., 2009; Samaha et al., 2012). On the other hand, others argue that large boards may suffer from poor communication and conflict between directors, which may adversely affect the decision- making process, while small boards are more efficient and manageable (Jensen, 1993; Vafeas, 1999, 2000; Cheng and Courtenay, 2006). Empirically, previous studies report mixed results regarding the relationship between board size and disclosure level. While some studies find a positive association (Karamanou and Vafeas, 2005; Abdel-Fattah, 2008; Akhtaruddin et al., 2009; Ntim et al., 2012; Samaha et al., 2012; Ahmed, 2015), other studies find a negative impact of board size (Yermack, 1996).

However, many other studies show that there is no influence of board size on the disclosure level (Lakhal, 2003; Arcay and Vazquez, 2005; Cheng and Courtenay, 2006; Al-Motrafi, 2008; Donnelly and Mulcahy, 2008; Hussainey and Al-Najjar, 2012; Al-Shetwi et al., 2011; Arafa, 2012). In Saudi Arabia, the Saudi Corporate Governance Code (SCGC) specifies that the board of directors should not be less than three and not more than eleven members. It can be noted that the SCGC is flexible in composing the size of corporate board since there is no agreed optimal board size. John and Senbet (1998) state that determining the board size varies among companies as it depends on external forces such as culture and regulations. Previous studies find that board sizes differ from one country to another; for example, Heidrick (2007) reports that while companies in the UK, Holland and Switzerland favour a small board, companies in Germany, Spain, Belgium and France are more likely to have a large board (thirteen to nineteen members). Since the association between board size and voluntary disclosure is not well documented in the Saudi context, the current study seeks to examine this association. The board size is measured by the number of board members.

Based on the above mixed findings, the relationship between board size and internet reporting can be tested using the following hypothesis:

H2.1 There is a significant relationship between board size and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.1.2 Board independence

The independence of the board of directors depends on the number of independent directors in the board who are those directors other than managing and functional directors (Abdel-Fattah, 2008). It is suggested that using independent directors is considered as a sign of good corporate governance that may result in increasing the quantity and quality of disclosure (Xiao et al. 2004). From an agency theory perspective, having independent directors on the board can reduce the agency problem and alleviate the conflict of interest (Fama, 1980). The presence of independent directors can help in monitoring and controlling management performance and thus increasing the transparency levels (Gul and Leung, 2004). Moreover, as representatives of shareholders, independent directors can protect the interests of shareholders and encourage more voluntary disclosure, which may reduce agency costs and information asymmetry (Forker, 1992). Also, Haniffa and Cooke (2002) claim that independent directors can convey their knowledge and experience to the board and improve board decision-making. In contrast, others suggest that independent directors may have a negative impact on the disclosure

practice. That is, independent directors may lack the appropriate knowledge about the company's operations and activities and may also have limited time to practice their responsibility effectively (Jiraporn et al., 2009). Furthermore, increasing managerial monitoring through independent directors may obstruct managerial performance (Bozec, 2005). However, the directors' independence may be impaired by factors such as the nature of the appointment process and the tenure length in the same company (Crowther and Jatana, 2005). This situation is clear in developing countries, especially Saudi Arabia, where social relations play a crucial role in appointing directors and they can keep their position for long periods (Hussainey and Al-Nodel, 2008). Regarding board formation in Saudi Arabia, the SCGC (Article 12) mandates that the independent directors[3] should comprise two members or one third of the board, whichever is greater, and that the majority of the members of the board have to be non-executive directors. Empirical studies indicate inconsistent results regarding the relationship between the proportion of independent directors and voluntary disclosure. Some studies reveal that independent directors have no impact of on the level of disclosure (e.g. Ho and Wong, 2001; Haniffa and Cooke, 2002; Lakhal, 2003; Xiao et al., 2004; Mangena and Pike, 2005; Ghazali and Weetman, 2006; Barako and Tower, 2008; Elsayed, 2010; Al-Shammari and Al-Sultan, 2010; Arafa, 2012; Zabri et al., 2016), while other studies show either a positive relationship (e.g. Forker, 1992; Cheng and Courtenay, 2006; Lim et al., 2007; Huafang and Jianguo, 2007; Kelton and Yang, 2008; Samaha et al., 2015) or a negative relationship between the proportion of independent directors and disclosure (e.g. Eng and Mak, 2003; Abdelsalam and Street, 2007; Abdel-Fattah, 2008; Kamalluarifin, 2016). In the case of Saudi Arabia, independent directors' impact has gained some attention recently; a few studies have pointed out the association between good corporate governance practices and the presence of independent directors in Saudi companies (Al-Moataz and Lakhal, 2008; Al-Moataz and Hussainey, 2012; Albassam, 2014). To the best of the researcher's knowledge, no previous studies have examined the relationship between the proportion of independent directors and internet disclosure in the Saudi context. Based on these arguments, the current study examines the relationship between board independence and corporate internet reporting. Board independence is measured by the percentage of independent members on the board (i.e. the

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[3] An independent director is a member of a board of directors who has complete independence. The SCGC indicates some cases in which the independency of a director is contravened, such as holding controlling shares in the company or its subsidiaries; having been a senior executive of the company or any of its subsidiaries during the preceding two years; and being a close relative of any board member or the executive management. Hereby, a non-executive director is a member of the board of directors who does not have a full-time position nor is entitled to a salary from the company on a periodic basis.

ratio of independent members on the board to the total members on the board). Therefore, the following hypothesis can be formulated:

H2.2 There is a significant relationship between board independence and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.1.3 Board frequency of meeting

Through board meetings, directors perform two main functions: decision management functions, such as strategic, investment and finance decisions, and decision control functions, such as the appointment of top-level management and monitoring capital allocation decisions, which include monitoring disclosure quality (Fama and Jensen, 1983). The frequency of board meetings indicates the intensity of board activities and the effectiveness of its monitoring role (Vafeas, 1999). Based on agency theory, increasing the number of board meetings held during the year indicates the soundness of governance practices, which alleviates the information asymmetry gap and thus reduces the agency cost (Kanagaretnam et al., 2007). Those boards of directors that meet more frequently tend to perform their responsibilities while taking into account the interests of shareholders (Vafeas, 1999). Therefore, the frequency of board meetings is more likely to produce high quality monitoring and enhance financial performance, which in turn can improve the company's transparency. The active board that performs its duties effectively, as represented by regular board meetings, may seek high quality disclosure (Carcello et al., 2002). On the other hand, stewardship theory proposes that directors are trustworthy, which limits the need for frequent board meeting and reduces the board's participation in the company's routine activities (Letza et al., 2004; Monks and Minow, 2011). That is, more regular board meetings may not enhance management performance or monitoring and thus may not improve reporting process. In addition, Vafeas (1999) argues that the usefulness of board meetings is not certain as these meetings can be costly in terms of meeting fees, travel expenses, management time and other expenses, which can affect disclosure level adversely. Further, directors usually have a limited time to spend effectively in monitoring managers, which may enhance disclosure levels; instead, most of their time is absorbed by routine activities and various formalities (ibid). Prior studies that investigate the impact of frequency of board meetings demonstrate mixed findings. Some studies reveal a positive impact of frequency of board meetings on earnings forecasts (Karamanou and Vafeas, 2005), capital allocation (Chen and Chen, 2012) and firm performance (Upadhyay et al., 2014). Other studies document a negative relationship between frequency of board meetings and firm

performance (Vafeas, 1999; Fich and Shivdasani, 2006; Jackling and Johl, 2009; Christensen et al., 2015) or earnings management (Xie et al., 2003). However, some studies report that frequency of board meetings has no impact on firm performance (El Mehdi, 2007; Albassam, 2014) or R&D disclosure (Ahmed, 2015). There are very limited studies that examine the relationship between frequency of board meetings and the level of disclosure. Kent and Stewart (2008) find a positive association between the frequency of board meetings and the quantity of disclosure. Similarly, Katmun (2012) shows that frequency of board meetings is significantly and positively associated with disclosure quality, while Bédard and Gendron (2010a), by reviewing the results of previous literature, deduce that there is no evidence to support the relationship between the frequency of board meetings and financial reporting quality. To the researcher's knowledge, the impact of the frequency of board meetings on disclosure has not yet been investigated in the Saudi Arabian context. The SCGC does not specify any required number of board meetings in a year. However, Article 16 states that "The board shall convene its ordinary meetings regularly upon a request by the Chairman. The Chairman shall call the board for an unforeseen meeting upon a written request by two of its members". Likewise, the Saudi Companies Act does not recommend a specific number of board meetings that a company should hold during the year. In the current study, the board frequency of meetings is measured by the number of board meetings held during the financial year. Based on the above arguments, the following hypothesis can be stated:

H2.3 There is a significant relationship between board frequency of meeting and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.1.4 Role duality

Role duality exists when the same person is the chief executive officer (CEO) and the chairman at the same time in a corporation, in other words, there is no separation between the two positions (Rechner and Dalton, 1991). Based on agency theory, role duality may generate a potential for conflict of interests, hence, the separation of the chairman and CEO roles helps to reduce agency costs as it leads to the separation of the two functions, namely decision management and decision control, which enhances the company's performance and reinforces effective control (Fama and Jensen, 1983). Moreover, agency theory assumes that CEOs should act in the best interests of shareholders, however, concentrating both CEO and chairman powers in one person may offer chances for self-serving managers to dominate the board and behave at the expense of shareholders, which may impair board independence and weaken the

board's monitoring function (Kelton and Yang, 2008). Thus, separating the roles of chairman and CEO can result in higher quality disclosure. In contrast, stewardship theory suggests that CEOs are trustworthy managers who tend to behave in the best interests of the company and shareholders (Davis et al., 1997). Therefore, combining the two roles will maintain board effectiveness and monitoring adequacy (Haniffa and Cooke, 2002). In addition, duality role CEOs are keen to run their companies effectively in order to create a good reputation and future career opportunities (Conyon and He, 2011). Moreover, role duality is expected to promote communications between the board of directors and managers, which can improve decision-making process and disclosure level (Al-Motrafi, 2008). Prior empirical studies report mixed results about the impact of CEO duality on disclosure. While most of the studies show an insignificant association between the level of voluntary disclosure and role duality (e.g. Haniffa, 1999; Arcay and Vazquez, 2005; Cheng and Courtenay, 2006; Abdelsalam and Street, 2007; Abdelsalam and El-Masry, 2008; Kelton and Yang, 2008; Al-Motrafi, 2008; Kent and Stewart, 2008; Abdel-Fattah, 2008; Al-Shammari and Al-Sultan, 2010; Elsayed, 2010; Arafa, 2012; Ahmed, 2015 and Kamalluarifin, 2016), other studies find that CEO duality tends to be associated with lower levels of voluntary disclosure (Haniffa and Cooke, 2002; Gul and Leung, 2004; Abdelsalam et al., 2007). In the Saudi context, the SCGC in Article 12 (paragraph d) recommends the separation of the positions of the chairman of the board and CEO or any other executive position in the company. Role duality in this study is measured by the dummy variable, which is "1" if the chairman is also the CEO, and "0" if the two positions are held by different persons. All the above discussions lead to the following hypothesis:

H2.4 There is a significant relationship between role duality and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.2 Ownership structure

Ownership structure is considered to be an important corporate governance mechanism that determines the quality of disclosure practices (Eng and Mak, 2003). Ownership structure indicates the equity concentration or dispersion among different owners in a company. Many studies investigate the association between ownership structure and voluntary disclosure practice to assess the impact of ownership structure on the quality of corporate disclosure (Mok et al., 1992; Lam et al., 1994; Ashbaugh et al., 1999; Nagar et al., 2003; Oyelere et al., 2003), however, the findings of these empirical studies are inconclusive. The ownership structure of Saudi listed companies comprises various types of owners: individual investors, employees,

institutional and government. This section discusses the four types of ownership structure: block holder ownership, director ownership, institutional ownership, and government ownership.

3.3.2.2.1 Block holder ownership

Block holders refer to those shareholders who own 5% or more of the total stocks in a company (Eng and Mak, 2003; Konijn et al., 2011). From an agency theory perspective, block holder ownership can create a great incentive to control and monitor management performance, which reduces information asymmetry and other agency problems; thus, as they obtain the required information internally, there is no need for additional disclosure on the websites of the companies. Moreover, block holders have a powerful impact on voluntary disclosure (Konijn et al., 2011; Ntim et al., 2012), whereby this power can be used to control managers' behaviour and reduce agency costs. Also, block holders may use their potential influence to manipulate and form disclosure timing and patterns to protect their competitive advantages. Therefore, the quality of disclosure of these companies is more likely to be low (Katmun, 2012). Prior literature on the relationship between block holder ownership and the level of corporate disclosure report mixed results. For instance, Oyelere et al. (2003), Abdelsalam and Street (2007), Kelton and Yang (2008) and Elsayed (2010) find a negative association between block holder ownership and internet disclosure. In contrast, a positive relationship was found by Haniffa and Cooke (2002); Huafang and Jianguo (2007); Desoky (2009) and Dolinšek and Lutar-Skerbinjek (2018). Many other studies show that block holder ownership was not significantly associated with the level of disclosure (e.g. Eng and Mak, 2003; Al-Saeed, 2006b; Ghazali and Weetman, 2006; Abdelsalam et al., 2007; Al-Motrafi, 2008; Abdel-Fattah, 2008; Barako and Tower, 2008 and Arafa, 2012). These inconclusive results of previous studies can be attributed to contextual differences between developed and developing countries. While developed countries rely on a coherent and effective corporate governance mechanism that promotes a good quality of disclosure, developing countries may experience difficulties in applying corporate governance mechanisms and usually have weak legal systems, impairing their disclosure quality (Haniffa and Hudaib, 2006). In Saudi Arabia, CMA states that it is compulsory for companies to disclose the owners of 5% or more in the annual report and notify the authority of any changes of the percentage of ownership held by significant block holders (Listing Rules, Article 45). Based on these discussions, the present study examines the association between block holder ownership and internet reporting in Saudi listed companies,

whereby block holder ownership is measured by the percentage of shareholders who hold 5% or more. Therefore, the following hypothesis can be stated:

H3.1 There is a significant relationship between block holder ownership and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.2.2 Director ownership

Director ownership is "the percentage of ordinary shares held by the CEO and executive directors, and includes their deemed interests" (Eng and Mak, 2003, P.330). It is argued that director ownership is very important because of the vital role that the board of directors plays in forming disclosure policies and practices (Jensen and Meckling, 1976; Eng and Mak, 2003; Albassam, 2014). Grounded on agency theory, companies with higher director ownership may have less incentive to disclose more information since the director ownership mitigates agency conflict between shareholders and managers, which reduces agency costs. It is assumed that director ownership supports the interests of managers and shareholders and hence reduces the demand for monitoring and controlling the management behaviour by shareholders and therefore reduces the need for additional disclosure (Eng and Mak, 2003; Samaha et al., 2012). However, McConnell and Servaes (1990) claim that directors may tend to increase their interests at the expense of shareholders' interests. When director ownership is low, directors' motivation to enhance performance may be reduced and can result in greater agency problems. Thus, shareholders need to increase managers' monitoring to alleviate these agency problems, which may increase the costs to the firm as well (Eng and Mak, 2003). This monitoring cost can be reduced by voluntarily disclosing more information, whereby disclosure considered as a substitute for directors' monitoring. In contrast, based on signalling theory, higher director ownership can lead to a higher level of online disclosure; that is, the directors are motivated to disclose more information to signal their efficient performance to shareholders. Furthermore, the incentive for the directors to disclose more may increase if they intend to trade their shares since this voluntary disclosure will increase the liquidity of the company, which can positively affect share price and give a good signal to shareholders (Healy and Palepu, 2001). Moreover, stewardship theory suggests that director ownership may result in a high incentive to monitor the interests of both shareholders and directors due to the convergence of interests between shareholders and directors (Jensen and Meckling, 1976). Therefore, companies with higher director ownership are more likely to improve the quality of online disclosure (Chen and Jian, 2006). Empirical studies report mixed results for the association between director ownership

and disclosure. Several studies provide evidence that director ownership is negatively associated with voluntary disclosure (e.g. Eng and Mak, 2003; Ghazali and Weetman, 2006; Hussainey and Al-Najjar, 2012), while other studies document a positive impact of director ownership (e.g. Chau and Gary, 2002; Nasir and Abdullah, 2004; Karamanou and Vafeas, 2005; Chen and Jian, 2006; Elsayed, 2010). However, the relationship between director ownership and voluntary disclosure was found to be insignificant by Wallace and Naser (1995), Kelton and Yang (2008), Chen and Jaggi (2000), Nagar et al. (2003), Mangena and Pike (2005), Huafang and Jianguo (2007), Donnelly and Mulcahy (2008), Samaha et al. (2012), Arafa (2012) and Ahmed (2015). In Saudi Arabia, to the researcher's best knowledge, the impact of director ownership on internet disclosure has not yet been examined. A considerable number of listed companies' shares are owned by families who usually dominate the membership of boards (Hussainey and Al-Nodel, 2008; Soliman, 2013), which is expected to have a great influence on disclosure practices. Consequently, the current study seeks to examine the impact of director ownership, measured by the percentage of total shares held by directors, on the internet reporting by Saudi listed companies. Thus, the following hypothesis can be formulated:

H3.2 There is a significant relationship between director ownership and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.2.3 Institutional ownership

Institutional ownership refers to the percentage of shares owned by institutional investors. It is assumed that institutional shareholders may have influential control through board membership and can increase incentives to improve disclosure quality (Shleifer and Vishny, 1997; Ajinkya, et al., 2005). Based on agency theory, the existence of institutional ownership mitigates conflicts of interest between managers and shareholders, since it is expected that institutions can help to enhance disclosure levels, which in turn reduce information asymmetry. Moreover, institutional shareholders have a great incentive to preserve their investment and thus they tend to ensure that adequate accountability is achieved between directors and investors, which can decrease agency costs (Haniffa and Hudaib, 2006). In addition, innovation theory predicts that institutional shareholders are more likely to encourage the adoption of internet as a disclosure tool. Ettredge et al. (2001) indicate that companies should satisfy different information needs for different users, which motivates them to utilize online disclosure to disseminate the required information. They find that companies with a considerable number of sophisticated investors tend to disclose more information on their websites than those with individual investors.

Institutional investors are considered sophisticated investors and usually have high technical expertise and can thus help monitor management (Guan et al., 2007). However, some studies argue that in companies where a substantial proportion of shares is owned by institutions, the incentive to voluntarily disclose more information may be very low because of the weak public demand for disclosure and the short-term focus of the institutions' investment (Eng and Mak, 2003; Ruiz-Mallorquí and Santana-Martín, 2011). Empirical studies that investigate the impact of institutional ownership on corporate disclosure report inconclusive results. Although many studies find a positive association between institutional ownership and voluntary disclosure (e.g., Barako et al., 2006; Chung and Zhang, 2011; Ntim et al., 2012), other studies reveal that the level of institutional ownership has a negative effect on disclosure (e.g. Karamanou and Vafeas, 2005; Sriram and Laksmana, 2006; Al-Motrafi, 2008; Elsayed, 2010). Conversely, Haniffa (1999), Haniffa and Cooke (2002), Celik et al. (2006), Huafang and Jianguo (2007), Abdel-Fattah (2008) and Arafa (2012) indicate that institutional ownership has no significant influence on corporate disclosure. In the Saudi context, the influence of institutional ownership on internet disclosure has been rarely investigated (only Al-Motrafi (2008) addresses this relationship), as individual investors dominate the Saudi stock market (Albassam, 2014). The SCGC recommends that institutional investors must disclose in the annual report any information related to their investment (Article 6). It also promotes institutional shareholders to exert pressure on companies to improve their disclosure practices. Because of the increasing proportion of shares held by institutions in the Saudi companies, the current study seeks to explore the relationship between institutional ownership and internet reporting in Saudi listed companies using the percentage of total shares owned by institutional investors as a measure of institutional ownership. Based on these discussions, the following hypothesis can be stated:

H3.3 There is a significant relationship between institutional ownership and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.2.4 Government ownership

Government ownership is the proportion of shares owned by the government in a company. Government ownership can be an influential factor that affects disclosure practices, especially in emerging markets, where concentrated ownership is the most common type of ownership structure (Cornett et al., 2010; Al-Moataz and Hussainey, 2012). According to capital need theory, companies with substantial government ownership can obtain the required capital from government funding without the need to attract external investors to raise their capital. As such,

the need for public disclosure is very weak and they are less likely to voluntarily disclose additional information (Eng and Mak, 2003). Moreover, cost benefit theory predicts that government ownership may allow easier access to financial and other critical resources and hence to the easier acquiring of needed information, which is available internally (Xiao et al., 2004). Therefore, companies with high governmental ownership are not expected to burden themselves with additional costs by disclosing more information on their website as this information is internally accessible. Furthermore, managers of high government-ownership companies, due to the expected intervention of the government in their businesses, may have a limited independence and tend to protect the interest of the government-owners by disclosing less information (Ghazali and Weetman, 2006). Since these companies might be subject to high political control, political theory assumes that high government ownership may have a negative influence on internet disclosure (Xiao et al., 2004). On the other hand, companies with a large proportion of shares held by governmental investors are usually under public focus and have to consider social goals and the nation's interest rather than improving performance and shareholders' interests (Boot et al., 2005). Therefore, they may be subject to public pressure to enhance disclosure levels, which may affect internet reporting positively (Abdel-Fattah, 2008). The findings of empirical studies regarding the relationship between government ownership and corporate disclosure are mixed. While Suwaidan (1997); Eng and Mak (2003); Abdel-Fattah (2008) and Ntim et al. (2012) report a positive relationship between voluntary disclosure and government ownership, Ghazali (2004) and Elsayed (2010) find this association to be negative. However, many other studies document an insignificant impact of government ownership on disclosure (e.g. Xiao et al., 2004; Ghazali and Weetman, 2006; Huafang and Jianguo, 2007; Al-Motrafi, 2008; Alshowaiman, 2008; Arafa, 2012). As the Saudi government holds a large amount of the shares of many companies, representing an average of 42% of the total value of the Saudi stock market (Albassam, 2014), it is worth shedding light on the influence of government ownership, measured by the percentage of shares held by the government, on internet disclosure practice of Saudi listed companies. Therefore, the current study assumes that:

H3.4 There is a significant relationship between government ownership and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.3 Audit committee

Audit committee is one of the most vital board subcommittees as it helps external auditors to evaluate the effectiveness of the company's internal control system, which can improve disclosure practices (Harrison, 1987). The main role of the audit committee, which is monitoring the reporting processes of unbiased information, may help in reducing agency costs and information asymmetry (Klein, 1998). From the agency theory perspective, the monitoring function of the audit committee can be perceived as a means to alleviate agency costs (Ho and Wong, 2001). Therefore, the prior literature asserts that audit committee effectiveness has an important impact on disclosure quality. For example, Karamanou and Vafeas (2005) and Kent and Stewart (2008) document that audit committee characteristics have a positive influence on voluntary disclosure. Also, Barako et al. (2006) state that the existence of an audit committee has a positive effect on enhancing disclosure quality. The audit committee effectiveness can be evaluated using three characteristics, which are audit committee size, frequency of audit committee meetings and audit committee independence (Zaman et al., 2011). In the Saudi context, although the SCGC has mandated since 2009 that all listed companies should form an audit committee (Article 14) and it determines the main responsibilities of the audit committee, the association between audit committee and disclosure has not yet been investigated in the Saudi context. The following sections discuss the three characteristics of audit committee.

3.3.2.3.1 Audit committee size

The size of the audit committee is perceived as a key factor affecting the effectiveness of the audit committee and thereby the disclosure quality (Kent and Stewart, 2008; Bédard and Gendron, 2010a). Audit committee size may vary depending on each company's culture and needs, thus the optimal size is the one that meets the board's expectations and helps it to fulfil its duties (KPMG, 2009). Based on an agency theory perspective, larger audit committees are more likely to achieve more effective monitoring, which can reduce agency costs (Xie et al., 2003; Bédard and Gendron, 2010a). It is claimed that an audit committee with a large number of members has a greater organizational position and authority (Kent and Stewart, 2008) and more extensive experience (Karamanou and Vafeas, 2005). However, the audit committee may experience a diffusion of responsibilities or a hindering of decision-making process if the size of the committee is too large (ibid). Further, Vafeas (1999) argues that increasing the audit committee size may result in incremental costs such as travelling costs and committee compensations, which could negatively affect disclosure practices. Bédard and Gendron (2010a) suggest that companies should weigh the benefits of increasing the size of the audit

committee against the drawbacks of incurring additional costs, poor communication, lack of coordination and inefficient decision-making processes, which are often associated with larger committees. The findings from previous studies that have examined the impact of audit committee size on disclosure are mixed. A positive association between audit committee size and disclosure quality has been documented by many studies (e.g. Lin et al., 2006; Song and Windram, 2004; Li et al., 2008; O'Sullivan et al., 2008; Nelson et al., 2010). However, Anderson et al. (2004), Karamanou and Vafeas (2005) and Kent and Stewart (2008) find a negative association, and Felo et al. (2003), Mangena and Pike (2005), Akhtaruddin et al. (2009), Katmun (2012) and Ahmed (2015) fail to find any supporting evidence for the effect of audit committee size on disclosure. Moreover, by reviewing the prior literature that examines the influence of audit committee on disclosure, Bédard and Gendron (2010a) find that out of 27 studies, only six reveal a positive relationship with disclosure, five a negative one, and 16 no significant relationship. The SCGC stipulates that the audit committee must have no less than three members, including a member who is an expert in financial and accounting matters and that executive board members are not eligible to become members of this committee (Article 14a). As previously mentioned, the association between internet reporting and audit committee size has not been statistically explored within the Saudi corporate context to the best of the researcher's knowledge. With the abovementioned conflicting views, it is expected that audit committee size may have either positive or negative influences on disclosure quality. Consequently, the current study examines the relationship between the internet reporting of the Saudi listed companies and audit committee size as measured by the total number of audit committee members; it is hypothesized that:

H4.1 There is a significant relationship between audit committee size and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.3.2 Audit committee frequency of meeting

Ronen and Yaari (2008) state that the number of meetings can be perceived as an indicator of the exerted effort of committee members to perform their tasks. Thus, audit committees have to devote enough time to execute their duties and responsibilities effectively (Kelton and Yang, 2008). Karamanou and Vafeas (2005) argue that frequent meetings of a committee permit more time to monitor and control company functions effectively, including disclosure transparency, to satisfy shareholders' requirements. In addition, there is a potential risk of undetected fraud or the manipulation of in corporate reports if the audit committee meets less frequently

(Katmun, 2012). However, a high frequency of meetings may not be considered as a reliable indicator of the effectiveness of an audit committee since more frequent meetings may be a sign of poor performance (Bédard and Gendron, 2010b). For instance, the audit committee may need to meet more frequently to approve numerous non-audit services or to review internal control weaknesses and issues related to disclosure requirements (ibid). Most of the prior research supports the importance of audit committee frequency of meeting. Menon and William (1994) indicate that frequent audit committee meetings are very important in monitoring the financial affairs of companies. Likewise, Collier and Gregory (2000) point out that the number and length of meetings is a crucial monitoring mechanism of an audit committee. Beasley et al. (2000) reveal that the increase of fraud cases in US companies is associated with having fewer audit committee meetings. Xie et al. (2003) state that audit committees that meet more often can carry out better monitoring and have a greater influence on disclosure practices. Also, Bronson et al. (2006) and Kent and Stewart (2008) find a positive relationship between the frequency of audit committee meetings and voluntary disclosure. Moreover, by examining the prior literature, Bédard and Gendron (2010b) report that 32% of the analyses show a positive relationship between audit committee frequency of meeting and disclosure, 3% a negative relationship, while 66% find this relationship to be insignificant. Similarly, Felo et al. (2003), Karamanou and Vafeas (2005), Baxter and Cotter (2009) and Ahmed (2015) find no significant association between the two. In the Saudi context, the association between frequency of audit committee meetings and disclosure has not yet been investigated to the best of the researcher's knowledge. Furthermore, it is expected that the number of audit committee meetings and their length may vary among companies, depending on the scope and complexity of the responsibilities of the audit committee (KPMG, 2009). The recently revised SCGC recommends that audit committees should meet regularly and that at least four meetings should be held during the financial year (Article 57). Assuming that an audit committee that meets frequently can increase the level of disclosure and reduce reporting problems, and thus be more likely to adopt internet reporting, the current study examines the impact of frequency of audit committee meetings, as measured by the number of audit committee meetings held during the year, on internet reporting. Based on the previous theoretical discussion and empirical evidence, it is hypothesised that:

H4.2 There is a significant relationship between audit committee frequency of meeting and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.3.2.3.3 Audit committee independence

It is claimed that the independence of an audit committee is a very important requirement for the committee to fulfil its responsibilities effectively (Felo et al., 2003; Abbott et al., 2004; Bédard et al., 2004). The independence of a member is defined as "the absence of relationships with the company that may interfere with the exercise of their independence from management and the company" (Bédard and Gendron, 2010a, P.51, 2010b, P.187). Three principal types of relationships are recognized: employment, personal and business relationships (ibid). Most of the prior literature assume that audit committee with a higher percentage of independent directors can enhance disclosure quality and ensure effective management monitoring (e.g. Haniffa and Cooke, 2002; Karamanou and Vafeas, 2005; Cerbioni and Parbonetti, 2007; Kent and Stewart, 2008; Nelson et al., 2010). Based on agency theory, independent directors are perceived as an effective monitor of management performance and financial reporting quality. It is expected that the presence of independent directors in the audit committee can reduce the conflict of interest and information asymmetry and thus increase the quality of disclosed information (Bédard et al., 2004). Moreover, since the audit committee is responsible for the financial affairs of the company, independent directors in the committee can play a crucial role in detecting any irregular issues in the financial reporting and prevent managers from disclosing low quality information (e.g. Xie et al., 2003, Kanagaretnam et al., 2007; Habbash, 2010). However, some researchers claim that independent directors may lack the ability to improve disclosure quality and corporate governance effectiveness. Committees that mostly comprise independent directors might be impaired by those independent directors who have previously worked in companies in different industries (Bathala and Rao, 1995). In addition, Agrawal and Knoeber (1996) argue that the appointment of independent directors may be affected by external factors, including specific representatives such as politicians, family relatives or environmental activists, which may harm the independence of the committee members. Prior studies document that the association between audit committee independence and voluntary disclosure is mixed. Although it is documented that companies with a more independent audit committee are more likely to present high level of disclosure (e.g. Klein, 2002; Xie et al., 2003; Karamanou and Vafeas, 2005; Bédard and Gendron, 2010b; Nelson et al., 2010; Katmun, 2012; Ahmed, 2015; Samaha et al., 2015 and Nekhili et al., 2016), many studies find no significant relationship between disclosure level and audit committee independence (e.g. Felo et al., 2003 and Kent and Stewart, 2008). Further, based on an extensive review of audit committee studies, Bédard and Gendron (2010b) conclude that out

of 34 studies, 16 show a positive relationship between reporting quality and audit committee independence and 18 find the relation insignificant. In the Saudi context, to the best of the researcher's knowledge, no study has examined the impact of audit committee independence on internet reporting before. However, it is worth mentioning that the SCGC states that at least one of the audit committee members should be an independent director and that no executive director should be among its members. Therefore, the current study investigates the relationship between internet reporting by Saudi listed companies and audit committee independence as measured by the percentage of independent members on the audit committee. Based on these arguments, it is expected that independence of audit committee is significantly associated with internet reporting and the following hypothesis can be stated:

H4.3 There is a significant relationship between audit committee independence and corporate internet reporting (total, content, presentation, timeliness usability and audit) by Saudi listed companies.

3.4 Summary

This chapter presented a review of the theories related to disclosure practices. These theories are classified into the four main approaches of the economic approach, political-economic approach, cost-benefit analysis approach and innovation adoption approach. The current study adopts a multiple-theoretical framework to support the hypotheses formation and results interpretation. Although each theory can provide an explanation for some disclosure practices, each of these are insufficient to completely explain all disclosure practices. Therefore, combining different theories can help to overcome the limitations of each theory and enhance the understanding of disclosure practices (Siebels and Knyphausen-Aufseb, 2012). It is perceived that using a joint approach with different theoretical frameworks to examine CIR will be more beneficial due to the variety of the variables in the current study. Therefore, these variables can be explained according to the appropriate theories that are more related to them, which will help add more depth to the research analysis. Furthermore, the chapter also presents the formulation of the research hypotheses. Hypotheses formulation is a connection between the theoretical background and the empirical tests. These hypotheses are developed based on the previously explained theories and the previous studies reviewed in chapter two. Hence, four main hypotheses are formulated in this chapter to test the relationship between the dependent variable CIR and its components and the independent variables (firm characteristics and corporate governance variables: board of directors, ownership structure and audit committee). Further, these main hypotheses are divided into sub-hypotheses, which will be tested in the

following chapters to answer the second research question. The next chapter discusses the methodology chosen by this study to attain its planned objectives.

CHAPTER 4
METHODOLOGY

4.1 Introduction

Reviewing the relevant literature and laying out the suggested theoretical framework for the study will help in making adequate methodological choices and in creating the proper research design. Methodology as a term has many suggested definitions depending on the purpose, background, discipline and nature of the conducted research. It can be defined as "the process, principles, and procedures by which we approach problems and seek answers" (Bogdan and Taylor, 1975, P.1), which means that methodology is concerned with the process of doing research. In accounting research, there are many types of methodological approach which can be used and there is no one ideal methodology (Ryan et al., 2002). The importance of choosing the appropriate research method arises from its role in the achievement of reliable results. Therefore, this chapter outlines the research design and methods adopted by the current study. Specifically, it presents the different philosophical assumptions of the research paradigms, explores various types of approaches and methods to verify the selection of the methodology to be used in the current study, and then provides the design of the current research, which outlines how to collect and analyse data based on the chosen methodology. This chapter mainly enlightens in detail the compatibility of the employed methodology regarding the purpose and objectives of the research as well as answering its questions. It commences with presenting research paradigms in section 4.2. While section 4.3 presents the research approaches, section 4.4 describes different research methods and the chosen methodology. The details of the research design are demonstrated in section 4.5 and are followed by the summary of the chapter in section 4.6.

4.2 Research paradigms

A research paradigm can be defined as a framework that guides how research is conducted, based on individual philosophies, perceptions, attitudes and assumptions about the world and the nature of knowledge (Collis and Hussey, 2009). The assumptions underlying each research paradigm are important to the development of knowledge and the nature of that knowledge (Saunders et al., 2012). Some researchers suggest three main reasons for understanding the research paradigm, namely that it helps in explaining research design, determining a suitable

design that will work effectively, and finally identifying designs that may be outside past experience (Easterby-Smith et al., 2002). Later, researchers recognized that it is essential to distinguish between natural sciences and social sciences, thus the development of social science has helped in the emergence of many research paradigms (Morgan and Smircich, 1980). According to Guba and Lincoln (1994), there are four types of research paradigms: positivism, post-positivism, critical theory and constructivism or interpretivism. These paradigms range from objectivity to subjectivity as they move from positivism towards interpretivism. Positivism implies that reality is external and can be determined objectively, while post-positivism also assumes that reality is external but is only imperfectly and probabilistically apprehendable. The critical paradigm presumes that reality is historical, so the apprehendable reality involves historically actual structures that are limiting and restricting as if they were real. Finally, interpretivism posits that realities are various and can be contradicting as they are human intellect products. However, the two main strands of research paradigms are positivism and interpretivism, which are commonly used in management research (Bryman, 2012). The next sections present a summary of each paradigm.

4.2.1 Positivism

The term 'positivism' was first introduced by Auguste Comte (1798–1857), was based on what is perceived, and was derived from a value-free, independent reality (Ryan at al., 2002). According to Bogdan and Tylor (1975), positivists seek facts or causes of social phenomena with little respect for the subjective states of individuals. Thus, positivism follows the view of natural science, which is concerned with the observable social reality to create law-like generalisations. Thus, positivism depends on the law of cause and effect (Saunders et al., 2012). That is, it deals with explaining and predicting relationships between variables; hence, generalization and deterministic relationships between cause and effect are crucial (Howell, 2013). Positivists suppose that reality is separated from social norms and assumptions, and develop theories grounded on empirical procedures, such as observation and experimentation (Hesse-Biber and Leavy, 2011). Watts and Zimmerman (1986) claimed that most accounting and auditing studies rely on positivism. To collect data, researchers identify, via observations, hypotheses which are tested through reliable scientific methods that can help in the further development of theories. In addition, positivists believe that social phenomena can be observed and measured using objective rather than subjective methods, therefore they can be interpreted through quantitative methods of analysis. This paradigm will be used in this study, since positivism depends on empirical evidence rather than subjective interpretations, to measure to

which extent Saudi listed companies use internet reporting and to identify the main factors that explain this adoption.

4.2.2. Interpretivism

Interpretivism deals with studying social phenomena in their natural environment, which implies that the values of researchers play a vital part in the research process (Saunders and Lewis, 2012). It involves subjective understanding of the meaning, ideas and different features of phenomena (Hughes and Sharrock, 1997). In this paradigm, the researcher is allowed to be a part of the setting and there is no attempt to separate the influence that the researcher has upon the observable phenomena. Further, since the interpretive paradigm is driven by human interests, researchers can gain more in-depth knowledge of the perceptions and beliefs of the social issues of a topic. Some researchers argue that interpretivism is very suitable in business and management research, especially in fields like marketing, organizational behaviour and human resource management where the main purpose is to explore, explain and understand organizational affairs rather than achieve changes (see: Ryan at al., 2002, AbuRaya, 2012 and Saunders et al., 2012). Collis and Hussey (2009) claim that interpretivism emerged due to the perceived insufficiency of positivism in meeting social scientists' needs. While positivism's concern is to measure social phenomena, interpretivism focuses on exploring social phenomena and understanding their complexity. Therefore, this paradigm is more related to qualitative rather than quantitative measurement, as the former depends more on perceptions, beliefs and ideas.

4.3 Research approach

The research approach concerns the research process and the way of considering the research design as well as how to achieve and explain the consequences. In general, research approaches are classified into two main approaches: deductive and inductive (Saunders et al., 2012); these are outlined in the next sections.

4.3.1. Deductive approach

Sekaran (2003, P. 27) defines the deductive approach as "the process by which we arrive at a reasoned conclusion by logical generalization of a known fact". It involves the development of testable hypotheses and an examination of the outcome of the inquiry, which leads the researcher to confirm or modify the theory based on the results (Robson, 2002). This approach progresses through sequential stages, beginning with developing a theory that explains causal relationships between concepts or variables, followed by deducing a number of hypotheses that

are suitable to investigate such relationships, then examining the logic of the arguments that generate them, next testing these hypotheses by collecting data and analysing them; finally, if the results are consistent with the hypotheses, then the theory is confirmed, or if not consistent, this means either rejecting or modifying the theory (Saunders et al., 2012). In addition, an important characteristic of the deductive approach is that concepts and variables should be operationalized in order to be measured quantitatively, although qualitative data may be used (ibid). As such, this approach is usually associated with quantitative research and has been widely used in the disclosure literature (e.g. Haniffa and Cooke, 2002; Eng and Mak, 2003, Barako et al., 2006, Abdel- Fattah, 2008 and AbuRaya, 2012). The deductive approach is considered more suitable for the current study since the research questions are developed based on a theoretical framework; after this, different hypotheses are formulated to examine the association between internet reporting and the independent variables, and lastly these hypotheses are tested to determine whether to accept or reject them accordingly.

4.3.2 Inductive approach

The inductive approach can be defined as a "process where we observe certain phenomena and on this basis, arrive at conclusions" (Sekaran, 2003, P. 27). In this approach, in contrast to the deductive approach, the research process begins with observations and then moves to collecting and analysing the data to formulate a theory from these observations (Vaus, 2001). Thus, the inductive approach aims to collect data first, then build a theory based on the examined data, which means that the theory follows the data and not the opposite (Saunders et al., 2012). One of the strengths of the inductive approach is that it develops an understanding of the human effects and permits alternative theories to be suggested within the limits of the research design. Further, research using this approach is more concerned with the context in which events take place, hence small samples may be more appropriate to study than large samples. Also, qualitative data is more likely to be used in the inductive approach, with a variety of collecting methods which help in establishing different views of phenomena (ibid).

In the research process, inductive and deductive approaches designate the role of theory in relation to research. As mentioned above, the deductive approach is associated with quantitative research, while the inductive approach is associated with qualitative research. These two methods are discussed in the next sections.

4.4 Research method

Saunders et al. (2012) state that the quantitative method is related to the deductive approach that follows objectivism ontological and positivism epistemological positions. In contrast, the qualitative method is related to the inductive approach that follows subjectivism ontological and interpretivism epistemological positions. The following points outline both qualitative and quantitative methods.

4.4.1 The qualitative method

Schwandt (2001) defines qualitative research as "a diverse term covering an array of techniques seeking to describe, decode, translate, and somehow come to terms with the meaning, rather than the measurement or frequency of phenomena in the social world". The qualitative research is commonly used in social studies and, based on interpretivism, seeks a better understanding of human behaviour and acquires the essential knowledge to develop a theory. Moreover, findings are derived, in contrast to quantitative research, without using any statistical procedures or other quantitative means. Instead, different means are used, such as text and sound generated from observations or interviews. Thus, qualitative methods are applicable "when the phenomena under study are complex, social in nature and do not lend themselves to quantification" (Liebscher, 1998, P.669). Applying qualitative methods in economic, accounting and information technology research is relatively limited, however, it can be used in management or organizational research such as management accounting as these involve, to some extent, social behaviours.

4.4.2 The quantitative method

Quantitative research, which relies on positivism, is regularly used in natural sciences. It is concerned with quantifying social phenomena by collecting and analysing quantitative data, and mainly focuses on the causal relationships between different variables. As such, this method ignores the potential interaction between the researcher and the studied phenomenon. Further, quantitative research is considered to be economical and fast in collecting statistics from large samples. Besides, adopting the quantitative method increases the research reliability through inherent objectivity, which make the results more generalizable and representative. Liebscher (1998, P.669) indicates that quantitative research "is appropriate where quantifiable measures of variables of interest are possible, where hypotheses can be formulated and tested,

and inferences drawn from samples to populations". Hence, this method is widely used in accounting, finance and other natural science research.

Based on the abovementioned discussion, the quantitative method is considered to be more appropriate to the current study as it aims to collect numerical data and analyse it in order to test and interpret the associations between variables.

4.4.3 Mixed methods

Saunders et al. (2012, P.674) define mixed methods research as the "use of both quantitative and qualitative data collection techniques and analysis procedures either at the same time (concurrent) or one after the other (sequential)". Mason (2002) suggests three reasons to use mixed methods in social research. Firstly, it allows researchers to explore new dimensions and different views. Secondly, it can be used to focus on more than one attribute, which enhances the researcher's ability to theorize. Finally, adopting mixed methods can enhance understanding and extend the explanation of the research problem. Combining the two methods is considered beneficial in strengthening the findings and can result in greater confidence in the research's inferences. It may also be useful in establishing more credibility and generalizability of the research (Saunders et al., 2012). Although many researchers emphasise that aggregating qualitative and quantitative techniques may help in increasing the objectivity of research interpretation and accuracy, attention should be paid to answering research questions in a proper way (Denscombe, 2007). However, mixed methods research encounters many challenges that affect its ability to manage all research problems. These challenges are: the philosophical framework is not yet agreed because this method is relatively new; difficulties in integrating quantitative results and qualitative findings; and other practical issues which include obtaining certain skills, time limitation and the resources required for large data collection and analysis (Morgan, 1998; Bryman, 2007; Creswell and Clark, 2011; Albassam 2014).

To sum up, the current study chooses the most suitable methodology that is consistent with the research problem, objectives and questions. That is, this research, as an applied study, uses empirical evidence to reach answers to the research questions that are related to the main factors affecting internet reporting in Saudi companies. As such, the most appropriate paradigm is positivism, which relies on empirical evidences to justify using internet reporting. The deductive approach is embraced as this research process starts with developing questions upon a determined theory, formulating hypotheses, and then using statistical techniques to test these hypotheses, which results in accepting or rejecting the relationship between internet reporting

and the independent variables. Finally, the quantitative method is implemented since this study collects and analyses numerical data to make inferences about the relationships between internet reporting and the explanatory variables. Based on the determination of the appropriate paradigm, approach and methods for the current study, the suitable research design can be created. The following section presents the research design in detail.

4.5 Research design:

Research design is "the general plan of how you will go about answering your research question(s)" (Saunders et al., 2012, P.159). It deals with the manner of operationalizing research questions and objectives into a project, which involves the purpose of the research, research strategies, the unit of analysis, population and sample, the sources for data collection, and the time horizon; the following points provide a brief overview of each one.

4.5.1 The purpose of the research

Based on the purpose that is appropriate to the nature of the research, there are three types of research: exploratory research, descriptive research and explanatory research (Saunders et al., 2012). Exploratory research aims to discover new insights into phenomena. This research is flexible regarding change and can be conducted using expert interviews, focus groups and in-depth individual interviews (ibid). While the purpose of descriptive research is to produce an accurate representation of events, persons or situations, whereby it is essential to obtain a clear depiction of the phenomenon and describe it before collecting its related data, explanatory research focuses on establishing and explaining causal relationships between variables related to a specific phenomenon (ibid). Accordingly, the purpose of the current study is both descriptive, to describe the extent of CIR in Saudi Arabia, and explanatory, to explain the relationship between CIR and the key determinant variables besides the effect on firm financial performance.

4.5.2 Research strategies

A research strategy is the link between the research philosophy and the consequent selection of methods to collect and analyse data (Denzin and Lincoln, 2005). Different research natures lead to different strategies that can be used, depending on how to achieve a desired level of research coherence which answers the research questions and meets the objectives (Saunders et al., 2012). Some of these strategies are more linked to quantitative research design, such as experiment and survey, while others are linked to qualitative research, such as ethnography,

action research, grounded theory, and narrative inquiry, or involve both quantitative and qualitative research, such as archival research and case study (ibid). Since the current study is quantitative and all Saudi listed companies are considered, the chosen strategy is the survey. The next section discusses this strategy in details.

4.5.2.1 Survey

A survey is a strategy that involves the structured collection of data from a sizable population (Saunders et al., 2012). A survey is usually associated with the deductive approach and is often used in exploratory and descriptive research, which makes it suitable for this study. It is the most common strategy used in business and management research, particularly in accounting studies (Abdolmohammadi and McQuade, 2002). Furthermore, Johns (1984) indicates that in developing countries, a survey is a practical and economic strategy in terms of time, effort and resources in social research. That is, a survey allows the collection of data from a sizable population at a lower cost with more control over the research process (Saunders et al., 2012). Many data collection techniques are related to this strategy, such as questionnaires, structured observation and structured interviews.

4.5.3 Study population and sample

The sample used to investigate the relationship between corporate internet reporting, corporate governance and firm financial performance was selected from Saudi listed companies. Only listed companies were chosen in this study, consistent with prior studies, assuming that these companies are more likely to possess the required resources to adopt CIR and that they represent the largest contribution to the Saudi economy. A total of 171 companies (population) were listed on the Saudi Stock Exchange (Tadawul) as of 31 December, 2014. Appendix 5 presents the classification of these companies by industry according to Tadawul classification[4]. All these companies have a website, with the exception of one company that does not have a website, thus it was excluded. Although some researchers suggest excluding financial companies, this study includes both financial and non-financial companies for many reasons. First, most of the studies that exclude financial companies were carried out in developed countries, where the number of companies is very large. However, in developing countries the number of listed companies is substantially less; hence, excluding financial companies would limit the sample size, particularly in Saudi Arabia, where financial companies comprise 27.5%

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[4] In 8th Jan 2017 a new industry classification has been adopted by Tadawul containing 20 sectors.

of all listed companies (see appendix 5). Second, both financial and non-financial companies are subject to the same regulations. Basically, disclosure requirements by the Capital Market Authority, the Companies Act, the Listing Rules and the Saudi Corporate Governance Code are all applicable to all companies, including financial companies. Finally, many studies in the CIR literature incorporate both financial and non-financial companies (e.g., Debreceny et al., 2002; Oyelere et al., 2003; Xiao et al., 2004; Oyelere and Mohamed, 2007; Desoky, 2009; Al-Shammari and Al-Sultan, 2010; Aly et al., 2010). The final sample consists of 170 listed companies, which represents all the industries in the Tadawul database.

The sample size used in the current study is relatively larger than those of existing Saudi studies (e.g., Al-Saeed, 2006b; Al-Motrafi, 2008; Alshowaiman, 2008; Hussainey and Al-Nodel, 2008; Robertson et al., 2012). For example, Al-Saeed (2006b) used a small sample of 46 companies in 2003 to examine the level of disclosure and the impact of some firm characteristics on the extent of disclosure by Saudi companies. Similarly, Hussainey and Al-Nodel (2008) investigated the extent of online reporting of Saudi listed companies using a sample of 64 companies, and Alshowaiman (2008) employed a sample consisting of 74 companies to examine the internet financial reporting (IFR) and auditing issues related to IFR in 2004 and 2005. Moreover, Robertson et al. (2012) and Al-Motrafi (2008) used samples of 100 and 113 companies respectively. Therefore, the sample size used in this study is another contribution to CIR Saudi studies.

4.5.4 Data sources and time horizon

The main source of data used in the present study consists of secondary data. Secondary data are the data that were originally collected for some other purpose and are ready to use. Recently, the number of sources of secondary data has massively expanded and gaining access to these sources has become very easy with the growth in the internet, which has resulted in the availability of more useful data for researchers (Saunders et al., 2012). In the current study, data are collected from the websites of Saudi listed companies, annual reports of the listed companies, DataStream, the Tadawul website, the Capital Market Authority (CMA), the Ministry of Commerce and Industry, the Saudi Arabian Monetary Agency (SAMA) and some useful websites such as the Argaam website (www.argaam.com). Regarding the time horizon of the collected data, the current study is considered a cross- sectional study. Most disclosure studies use cross-sectional analyses, which focus on disclosure practices over a specific period of time (usually one year) (e.g., Debreceny et al., 2002; Xiao et al., 2004; Kelton and Yang, 2008; Garg and Verma, 2010). As this study is a cross-sectional study, a snapshot of the Saudi

listed companies' websites has been taken using the "Portable Offline Browser" software version 6.9. This software is used to take a snapshot of each company's website on the same specific date (31 December, 2014) and download these websites for later offline searching, checking and analysing. Considering the dynamic nature of the internet and the frequent updates, using Offline Browser ensures that any changes to the companies' websites after the study period do not affect the study. Offline Browser also allows an unlimited number of websites to be downloaded for later offline use and provides support for all web technologies, such as Java, XML/XSL/DTD, RealMedia and Macromedia Flash. Although there are a variety of software enabling website downloading, Offline Browser is considered to be the most efficient software with the fastest downloading as well as the most flexible and easiest usage (Usama and Matsumoto, 2004). As such, the present study is a cross-sectional single country study focusing on CIR practice in Saudi listed companies, whereby Saudi Arabia is a developing country with an emerging stock market.

4.5.5 Variables and research instrument

This study attempts to investigate the determinants of voluntary corporate internet disclosure in Saudi listed companies. The following subsections present the variables examined in this study and the measures used for these variables. Specifically, the next paragraph discusses the disclosure index used to measure the dependent variable: corporate internet reporting (CIR). Then, the definitions and measurement of the independent variables are outlined.

4.5.5.1 Dependent variable: disclosure index

One of the major limitations of voluntary disclosure studies is the difficulty in measuring corporate disclosure since there is no agreement on an effective approach to measurement (Healy and Palepu, 2001). Two primary approaches to measure disclosure have been proposed: a subjective analysis which depends on analysts' ratings and a semi-objective analysis relying on content analysis which measures disclosure using disclosure indices (Beattie et al., 2004). Analysts' ratings are based on the evaluations of financial analysts and other agents. Although analysts' ratings are provided by professionally experienced analysts using a wide range of disclosure sources (Al-Saeed, 2006a; Hassan and Marston, 2010), they may be affected by the analysts' perception when evaluating corporate disclosure, and tend to be restricted to large companies (Botosan, 1997). Moreover, the majority of analysts' ratings have been constructed in developed countries, which makes it difficult to adopt in other countries due to the differences in cultural, social and institutional situations (Ammann et al., 2011). The most

common analysts' ratings are provided by the Association for Investment Management and Research (AIMR), the Centre for International Financial Analysis and Research (CIFAR), and the Standard and Poor's Transparency and Disclosure Rating (Gruning, 2007). Due to the criticism of the analysts' ratings approach, many studies use content analysis to measure disclosure (see: Gray et al., 1995; Beattie et al., 2004; Haniffa and Cooke, 2005; Abraham, 2008). Krippendorff (2004, P.18) defines content analysis as "a research technique for making replicable and valid inferences from texts (or other meaningful mater) to the contexts of their use". It involves "codifying quantitative and qualitative information into pre-defined categories in order to derive patterns in the presentation and reporting of information" (Guthrie et al., 2004, P.287). The wide use of content analysis can be attributed to many reasons: (1) it is reliable and systematic in coding and measuring data; (2) the quantitative nature of the data collected makes this approach more objective; (3) it has more external validity because the measurement is isolated from the measured phenomenon; and finally (4) content analysis can deal with large volumes of data (Krippendorff, 2004).

Further, content analysis can be performed manually or be computer-aided (Beattie et al., 2004). Computerized content analysis can cope with large samples at low cost and enhance reliability and validity, however it may not be applicable in many countries because it requires the availability of disclosure items in the same language, which is English in most cases (Abdel-Fattah, 2008). Therefore, a considerable number of studies use manual content analysis, whereby researchers develop a self-constructed disclosure checklist (i.e. disclosure index) to measure corporate disclosure (Ahmed and Courtis, 1999; Haniffa, 1999; Ghazali and Weetman, 2006; Al-Htaybat, 2005; Abdel-Fattah, 2008; Arafa, 2012; Samaha et al., 2015). As such, a disclosure index, which is heavily used in accounting research, is a research method derived mainly from manual content analysis; it is also a partial form of content analysis (Al-Htaybat, 2005). Figure 4-1 presents the approaches that are used in the corporate disclosure field.

The disclosure index used in this study to measure CIR is a self-structured disclosure checklist used to score the disclosed items on the website of each company and then utilise these scores to measure the disclosure level. This method was chosen because analysts' ratings are not available in the Saudi context, and the computerized analysis is not applicable to Arabic websites. Therefore, the manual content analysis using a disclosure index is the most appropriate method to analyse the content of Saudi listed companies' websites to assess the CIR practice.

Figure 4.1: The Path of Disclosure Index Research
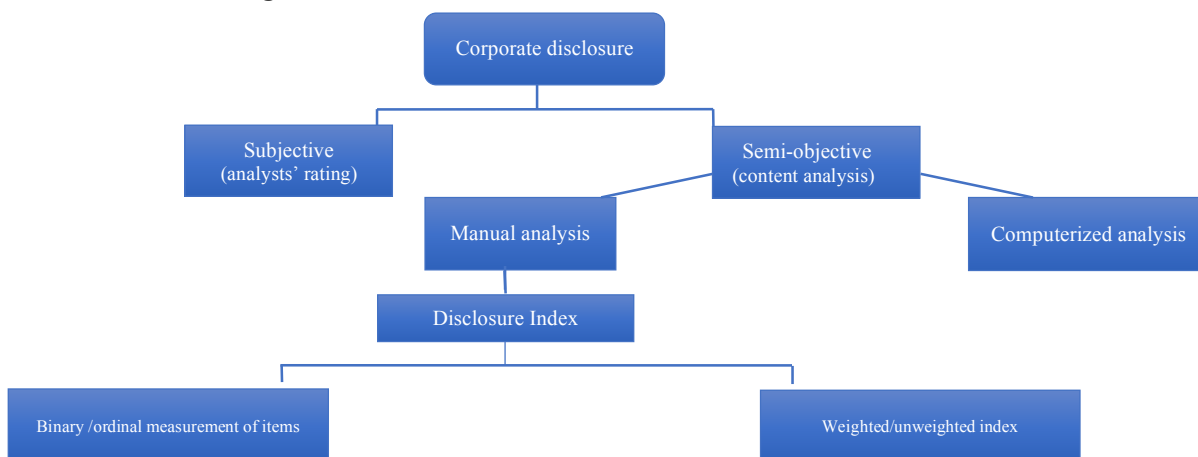
Adapted from Beattie et al. (2004, P.209) and Al-Htaybat (2005, P.128).

The next paragraph shows the procedures that were followed to measure the dependent variable, CIR, using the disclosure index.

4.5.5.1.1 Construction of the disclosure index

Determining the disclosed items to be included in the checklist is the first step to constructing the disclosure index. However, previous studies indicate that there are no agreed guidelines on the number or the items to be selected for use in a disclosure index (Wallace et al., 1994). The number of items and the content of the disclosure index vary from one study to another and depend mainly on the study aims (Wallace and Naser, 1995). Thus, most of the disclosure research selects the disclosure items based on prior studies, laws and regulations, professional organisations, and recommendations from certain user groups (Marston and Shrives, 1991; Abdelsalam, 1999; Ahmed et al., 2017). The current study follows previous studies and develops a self-structured disclosure index to measure CIR of Saudi listed companies considering the requirements of the Saudi General Presentation and Disclosure Standard, Corporate Governance Regulations, Listing Rules and Companies Act and some special features of the Saudi context.

To construct the disclosure index, a preliminary checklist was developed by reviewing the disclosure literature to select the items that Saudi listed companies may disclose on their websites. The main studies were consulted, such as Ashbaugh et al. (1999), Debreceny and Gray (1999), Haniffa (1999), FASB (2000), Oyelere et al. (2003), Fisher et al. (2004), Marston and Polei (2004), Xiao et al. (2004), Abdelsalam and El-Masry (2008), Al-Motrafi (2008), Alshowaiman (2008), Kelton and Yang (2008), Elsayed (2010) and Hindi and Rich (2010)

which were similar to those followed by Omran and Ramdhony (2016) and Ahmed et al. (2017). Then, a list of items that are appropriate for internet disclosure was created. To form the final checklist, this list was compared with the requirements of Saudi regulations and it was checked to ensure the applicability of the selected items to Saudi listed companies, thus enhancing the validity of the disclosure index. Afterwards, the checklist was sent to 6 academics in the field of accounting in three different countries (Saudi Arabia, Egypt, the UK) and 7 company administrative staff to receive their feedback and refine the list, which made the checklist more valid. Finally, a pilot study of 15 companies that represent all the industries of the Saudi market was performed to update the checklist and ensure the applicability and validity of the checklist items. Consequently, the final checklist consists of 196 items categorized into 5 sub-indices: the content sub-index, which shows what information is disclosed on the company's website, contains 70 items; the presentation sub-index, which refers to how the information is presented, contains 26 items; the timeliness sub-index, which deals with the timeliness with which the information is updated, contains 18 items; the usability sub-index, which shows the ease of use and clear structure of a website, contains 54 items; and finally the audit sub-index, which represents how much the presented information on the website is reliable, trusted and transparent, contains 28 items. Appendix 6 demonstrates the final checklist with its 5 categories.

Although the final checklist has many items that were used in previous studies, other items are unique to this study to reflect the distinctive features of the Saudi environment. That is, some items are relevant to Arabic countries only, such as item number 3 (Arabic language webpages) and number 26 (auditor's report in Arabic) in the presentation sub-index, item number 37 (navigation area positioned on right/top side of screen for Arabic website) in the usability sub-index, and item number 21 (note on language translation and audit) in the audit sub-index. Moreover, other items are included because they may be useful to the users of the website and they are unique to Saudi Islamic society, such as item number 27 (displays names and details of Sharia committee) in the content sub-index, item number 43 (visibility of names and details of Sharia committee) and number 54 (information that enables Muslims to determine the amount of Zakat) in the usability sub-index. Additionally, another two items dealing with social media use are added by the researcher; these have been not found in prior studies, although social media has become important in the new world of technology and companies tend to use it to a great extent; these are number 70 (social media links) in the content sub-index and number 5 (provides feature to register for future email/ social media alerts regarding press releases, newsletters, etc.) in the timeliness sub-index.

4.5.5.1.2 Scoring the disclosure items

After determining the disclosed items, scoring these items can be done using two different scoring mechanisms. The most commonly used scheme is binary coding (dichotomous), which relies on the presence or absence of an item. The item scores 1 if it is disclosed or 0 if it is not. The other coding scheme is a qualitative approach which employs ordinal measures (commonly three levels), whereby quantified disclosure scores 2, qualitative disclosure scores 1 and no disclosure scores 0 (Beattie et al., 2004). Moreover, another issue related to the scoring process is applying a weighted or un-weighted approach to score disclosed items.

Weighted scoring distinguishes the effect of each item and assigns a weight depending on the importance of each item. The weightings can be determined by seeking the opinions of expert analysts and specialists (ibid). Several prior studies use this approach (e.g. Wallace et al., 1994; Debreceny et al., 2002; Marston and Polei, 2004; Al-Janadi et al., 2013; Mkumbuzi, 2016). However, this approach faces much criticism because it depends on selected groups' judgment, which may differ and result in subjective weights. In addition, the level of the assigned importance may vary over time and among industries and countries. As a result of these criticisms, a considerable number of studies use unweighted scores (e.g. Ashbaugh et al., 1999; Xiao et al., 2004; Abdelsalam et al., 2007; Kelton and Yang, 2008; Desoky; 2009; Hossain et al., 2012; Desoky and Mousa, 2013). In unweighted scoring, all disclosure items are equally important and hence have equal weights. Consequently, the current study adopts the unweighted binary approach to score disclosed items which score the item 1 in the checklist if disclosed on the company's website or 0 otherwise.

Using unweighted scoring can be attributed to many reasons: first, it avoids the subjective assessment of weights of disclosed items, which may in turn affect the reliability of the disclosure index (Marston and Shrives, 1991); second, unweighted scoring is more appropriate to this study in two ways; the aim of the study is examining the overall CIR practice rather than the importance of each item, and all stakeholders are considered, not specific groups (Cooke, 1989a); third, many studies used both weighted and unweighted scoring and found no substantial differences in the results (e.g. Wallace and Naser, 1995; Debreceny et al., 2002; Bollen et al., 2006); and finally, using unweighted scoring is consistent with most disclosure studies, which makes it easy to compare the results with these studies (e.g., Al-Saeed, 2006b; Abdelsalam and Street, 2007; Samaha et al., 2012).

4.5.5.1.3 Measuring the disclosure index

Having scored the disclosed items, the disclosure index which measures the dependent variable (CIR) can be calculated. In order to calculate the total CIR, the score of each dependent variable (content, presentation, timeliness, usability, and audit) is calculated as follows:

CIRS (CIRCS, CIRPS, CIRTS, CIRUS, CIRAS) = $\sum_{i=1}^{n} di$

Where:

CIRS = actual CIR total score, CIRCS = actual CIR content score, CIRPS = actual CIR presentation score, CIRTS = actual CIR timeliness score, CIRUS = actual CIR usability score, CIRAS = actual CIR audit score

di: =1 (if an item is disclosed on the website), = 0 (otherwise) for the *i* company

n $\leq$ *number of CIR* (CIRCS, CIRPS, CIRTS, CIRUS, CIRAS) *items*.

Since the measurement of the disclosure index relies on the scoring of each sub-index (dependent variables), six indices representing the total CIR and the sub-indices of disclosure (CIR content, CIR presentation, CIR timeliness, CIR usability, and CIR audit) are calculated. Each index is the ratio of the actual scores to the maximum applicable disclosure score for each company. As such, the CIR total index can be computed as follows:

$$CIRI = \frac{actual\ CIR\ total\ score}{Maximum\ CIR\ total\ applicable\ disclosure\ score}$$ where: *CIRI* is CIR total index.

The same procedures are followed to calculate the other indices: *CIRCI* (CIR content index), *CIRPI* (CIR presentation index), *CIRTI* (CIR timeliness index), *CIRUI* (CIR usability index) and *CIRAI* (CIR audit index).

4.5.5.1.4 Reliability and validity of the disclosure index

As this study constructs a disclosure index as the research instrument to measure CIR practices, two principal criteria should be considered to assess the quality of the instrument, which are reliability and validity.

Reliability is "the ability of a measurement instrument to reproduce consistent results on repeated measurements" (Hassan and Marston, 2010, P.24). The reliability of a measure concerns the stability and consistency of measuring a concept using the research instrument (Sekaran, 2003). Stability means that the measure is able to produce the same finding when repeated over time or by a different researcher (Saunders et al., 2012), whereas consistency refers to the extent to which all components of a research instrument are measuring the same thing (Hassan and Marston, 2010). There are three common forms of reliability: inter-coder

reliability; test-retest; and internal consistency. Inter-coder reliability is when more than one coder performs the coding and yields similar results. Test-retest reliability is used as an indicator of the stability of the instrument, and internal consistency, the most common form, can be used to measure consistency (Hair et al., 2009; Hassan and Marston, 2010). Usually, internal consistency reliability is measured using Cronbach's coefficient alpha, which is one of the most frequently used statistics to assess the consistency of different items that are combined to construct a reliable measurement. The Cronbach's alpha value ranges from 0 to 1; the higher the alpha coefficient, the higher the reliability. A level of 0.7 or more is considered acceptable to obtain good reliability (Hair et al., 2009). The current study uses Cronbach's coefficient alpha test to measure the reliability of the disclosure index as it is shown in chapter 5. Although reliability is an important characteristic of the quality of the research instrument, validity should be considered as well to ensure the good quality of the instrument.

Validity focuses on the accuracy and it can be defined as "the extent to which data collection methods accurately measure what they were intended to measure" (Saunders et al., 2012, P.684). Thus, the constructed disclosure index is valid if it measures the same thing that the researcher intends (Marston and Shrives, 1991). Generally, three forms of validity can be identified: criterion-related validity; content validity; and construct validity. Criterion-related validity is "the ability of a statistical test to make accurate predictions" (Saunders et al., 2012, P.668). Criterion validity "is established when the measure differentiates individuals on a criterion it is expected to predict" (Sekaran, 2003, P.206). Content validity refers to the extent to which "the measure includes an adequate and representative set of items that tap the concept" (Sekaran, 2003, P.206). Several methods can be applied to achieve content validity, such as a careful definition of the research based on the literature review or discussions and using a panel of individuals to assess how necessary each item is (Saunders et al., 2012). Construct validity is to ensure that the results of a measure are fit well to the theories for which the test is designed (Sekaran, 2003). It is important to recognize the theoretical justification of using a measure in order to assess construct validity (Hair et al., 2009). Previous studies in the disclosure literature used the correlation between the total disclosure index and its components and the relationship between overall disclosure and explanatory variables to validate the disclosure index (Hail, 2002; Abdel-Fattah, 2008; Elsayed, 2010, Albassam, 2014). In this study, the validity of the disclosure index was improved using both content validity and construct validity.

4.5.5.2 Independent variables

Following the disclosure literature, several variables were identified as being relevant to

voluntary disclosure practices and are included in this study. The explanatory variables are classified into two main categories. The first group relates to firm characteristics (7 variables) and the second group relates to corporate governance characteristics (11 variables), which comprise three groups: board structure, ownership structure and audit committee variables. It is perceived that choosing the proxies of the explanatory variables and the applied criteria to determine these variables play a crucial role in explaining the relationship between the independent variables and the extent of disclosure. The results of different studies concerning this relationship tend to vary, which may be attributed to the variation of the measures operationalised (Ahmed and Courtis, 1999). This study's criteria for choosing independent variables rely on the theoretical background which supports the association between these variables and internet reporting, the prior literature review in the area of voluntary disclosure, and the relevance of these variables to the Saudi context.

Table 4.1 provides a summary of all independent variables used in the hypothesis tests and how they are measured in this study. The next chapter discusses these variables in detail.

Table   4-1: Explanatory variables and their measurements

No.	Independent variable	Proxy	Category
1	Firm size	Natural log of book value of firm assets	Firm characteristic
2	Firm growth	Ratio of: (current year sales - last year sales) divided by last year sales	Firm characteristic
3	Leverage	Debt ratio (total debt : total asset)	Firm characteristic
4	Liquidity	Current ratio (current assets : current liabilities)	Firm characteristic
5	Dividends	Dummy variable coded "1" if the company pays dividends during the financial year, "0" otherwise	Firm characteristic
6	Industry type	Dummy variable coded "1" if the company is financial, "0" otherwise	Firm characteristic
7	Audit type	Dummy variable coded "1" if the company audited by big four company, "0" otherwise	Firm characteristic
8	Board size	Number of members on the board	Board structure
9	Board independence	The percentage of independent members on the board	Board structure
10	Board frequency of meeting	Number of board meetings during the financial year	Board structure
11	Role duality	Dummy variable coded "1" if the CEO is the chairman at the same time, "0" otherwise	Board structure
12	Block-holder ownership	The percentage of shareholders who hold 5% or more	Ownership structure
13	Director ownership	The percentage of total shares owned by directors	Ownership structure
14	Institutional ownership	The percentage of total shares owned by institutional investors	Ownership structure
15	Government ownership	The percentage of total shares owned by the government	Ownership structure
16	Audit committee size	Number of members on the audit committee	audit committee
17	Audit committee frequency of meeting	Number of audit committee meetings during the financial year	audit committee
18	Audit committee independence	The percentage of independent members on the audit committee	audit committee

4.5.6 Statistical analysis

This section provides an overview of the statistics procedures that are used to conduct the empirical analysis. Descriptive statistics along with testing hypotheses procedures are performed to answer the research questions. The details of these procedures are outlined in the following paragraphs.

4.5.6.1 Descriptive statistics

In order to describe and compare the variables numerically, descriptive statistics are used according to the research questions and objectives (Saunders et al., 2012). Descriptive statistics analyses are applied to the total CIR index and the five sub-indices for each item. These statistics focus on two aspects: the central tendency measures (e.g. mode, median, mean); and the dispersion measures (e.g. inter-quartile range, standard deviation) (ibid). The findings of the descriptive analyses are discussed in chapters five, six and seven.

4.5.6.2 Testing hypotheses

Although it is important to have a descriptive overview of the research variables, using hypothesis testing is essential to examine the relationships between variables. Hypothesis testing is the process of investigating how each variable relates to another by testing the likelihood of a relationship occurrence and comparing the results of the collected data with what is theoretically expected. Following most of the disclosure studies, the current study formulates some hypotheses to test the relationships between the dependent and independent variables using bivariate and multivariate analyses. The bivariate analysis is performed to test the strength of the association between two variables, i.e. CIR and each independent variable. It can be either non-parametric statistics, which are used when the data are not normally distributed, or parametric statistics, which are used when the data are numerical and normally distributed. In this study, both non-parametric and parametric statistics are conducted for two reasons: to benefit from the strengths of each method (Haniffa, 1999) and to ensure the similarity of conclusions and reduce the probability of errors (Cooke, 1989b). Moreover, the multivariate analysis is used to test the relationship between CIR (total and its components) and the independent variables and explain the explanatory power of these relationships. It can be conducted using multiple regression techniques as these techniques can determine which dependent variables can best explain the variation of the dependent variable and decide the

significance of each independent variable when other independent variables are controlled (Howitt and Cramer, 2005). However, because Ordinary Least Square (OLS) is the dominant multiple regression technique in the disclosure literature, it is used in this study to test the relationship between CIR and the explanatory variables.

4.5.7 Research model

The research model presents the dependent and independent variables that are examined in the study. Following prior literature, and in order to test these variables, a multiple regression analysis is used to investigate whether variations in the level of internet reporting can be explained by the independent variables. Therefore, there are six main models, which are used to examine the association between CIR and its main components and the explanatory variables. These models are stated as follows:

$$CIR\ (CIRc,\ CIRp,\ CIRt,\ CIRu,\ CIRa)\ ic = \alpha + \beta_1 SIZEc + \beta_2 GROWTHc + \beta_3 LEVc + \beta_4 LIQc + \beta_5 DIVc + \beta_6 INDUSTRYc + \beta_7 AUDITc + \beta_8 BSIZE\ c + \beta_9 BINDEP\ c + \beta_{10} BMEET\ c + \beta_{11} RDUL\ c + \beta_{12} BLOCK\ c + \beta_{13} DOWNER\ c + \beta_{14} IOWNER\ c + \beta_{15} GOWNER\ c + \beta_{16} AUSIZE\ c + \beta_{17} AUMEET\ c + \beta_{18} AUINDEP\ c + \varepsilon\ ic.$$

CIR = total corporate internet reporting index.

CIRc = content of corporate internet reporting index.

CIRp = presentation of corporate internet reporting index.

CIRt = timeliness of corporate internet reporting index.

CIRu = usability of corporate internet reporting index.

CIRa = audit of corporate internet reporting index.

 i   = number of indices of corporate internet reporting, c = number of company, α = the intercept, β_1 …. $_{18}$ = the coefficients of the independent variables and ε = the error term.

Two types of independent variables will be tested in the current study. The first is continuous variables which includes:

SIZE= firm size, GROWTH = firm growth, LEV = leverage, LIQ = liquidity, BSIZE = board size, BINDEP = board independence, BMEET = board frequency of meeting, BLOCK = block-holder ownership, DOWNER= director ownership, IOWNER= institutional ownership, GOWNER = government ownership, AUSIZE= audit committee size, AUMEET = audit committee frequency of meeting, AUINDEP = audit committee independence. While the second is for dummy variables and includes:

DIV = dividends, INDUSTRY= industry type, AUDIT = audit type and RDUL= role duality.

As mentioned before, to construct these disclosure indices, many steps were taken. First, prior disclosure literature was reviewed to develop the preliminary checklists. By selecting the items that are appropriate for internet disclosure and could be disclosed by Saudi listed companies, the disclosure indices were created. Furthermore, these indices were compared with the requirements of Saudi regulations to form the final checklists. Then, the checklists were sent to academics in the field of accounting and company administrative staff in three different countries (Saudi Arabia, Egypt, the UK) to obtain their feedback and enhanc the validity of the disclosure indices. Finally, a pilot study of 15 companies represent all the industries of the Saudi market was carried out to refine the checklists and ensure their applicability and validity. For more details, see section (4.5.5.1.1) for how these disclosure indexes were constructed, section (4.5.5.1.2) for scoring these indexes and section (4.5.5.1.3) for measuring disclosure indexes.

4.6 Summary

This chapter seeks to introduce the suitable methodology that has been adopted for the current study to examine the relationships between corporate governance, firm characteristics and voluntary internet reporting in addition to the effect of internet reporting on firm financial performance in Saudi Arabia. It starts with the philosophical assumptions of the research methodology and presents positivism as the most appropriate paradigm for the research problem and questions, which relies on empirical evidences to justify the use of internet reporting. Positivism permits the application of a deductive approach as the research process starts with formulating questions based on a determined theory, developing the hypotheses, and then using statistical techniques to test these hypotheses, which explain the relationship between CIR and its components and the explanatory variables, namely firm characteristics and corporate governance variables. This relationship can be examined using the quantitative method, where numerical data is collected and analysed to reach to a conclusion.

This study is both a descriptive study which allows describing the actual practice of CIR and an explanatory study to explain the association between CIR and the independent variables besides the effect on firm financial performance. Thus, as a cross-sectional single-country study, the survey strategy is used to examine the websites of all 171 Saudi listed companies in 2014, which represent the sample population. Moreover , the chapter describes the sources of data and the construction of the research instrument; i.e. the disclosure index. The study applies content analysis to measure the current CIR practice and its components by using a self-constructed checklist of CIR items. It also discusses the reliability and validity tests of the

constructed index in addition to using the unweighted and dichotomous scoring method to enhance the objectivity of the study. Considering that Saudi society is heavily affected by its Arabic culture and Islamic values, the disclosure index contains some items concerning Islamic issues. The chapter concludes by presenting the statistical analyses that are used to describe and examine the associations between CIR and the independent variables. While univariate analysis is used to present the descriptive analysis of these variables, parametric and nonparametric tests are used as bivariate analyses to investigate the relationship between CIR and its components and each explanatory variable. Further, to examine the association between CIR and all the dependent variables, this study uses multivariate analysis, i.e. regression models. Two regression models are performed, namely the un-transformation model and the log transformation model in addition to the bootstrap model as robustness for the obtained results and reduced models as supplemental analyses. With respect to the impact of CIR and its components on firm financial performance, the OLS model is used to determine this association. However, before testing the research hypotheses, the next chapter demonstrates the descriptive statistics for CIR to assess the extent of disclosure in the Saudi context.

CHAPTER 5
THE DESCRIPTIVE ANALYSIS OF CORPORATE INTERNET REPORTING BY SAUDI LISTED COMPANIES

5.1 Introduction

This chapter presents the descriptive analysis of corporate internet reporting (CIR) and its components in Saudi listed companies (SLC). More precisely, this chapter aims to achieve the first objective of this study by providing an in-depth understanding of the actual practice of CIR total and its components in SLC by describing the frequencies of CIR and its components, which may help in exploring the potential effective items in satisfying stakeholders' different needs and assessing the extent of using the internet as a tool to disseminate information in the Saudi context. Therefore, this chapter seeks mainly to answer the research first question: what is the extent of corporate internet reporting (CIR) by Saudi listed companies (SLC)? The chapter is structured as follows: Section 5.2 presents the assessment of the reliability and validity of CIR total and its component indices. The extent of CIR total is reported in section 5.3, and is followed by the extent of CIR components, which is presented in section 5.4. Finally, section 5.5 provides a summary of this chapter.

5.2 Reliability and validity of CIR total and its component indices

As stated before in section 4.5.5.1.4, reliability and validity tests are used to assess the goodness of a measure. It is essential to determine the accuracy of the disclosure index in measuring all the components of CIR to achieve the goodness of the research measure. Many forms of tests can be applied to evaluate the reliability and validity of a measure. The current study considers internal consistency tests to evaluate the reliability of the CIR indices and content and construct validity tests to evaluate the validity. Detailed discussions are presented in the following points.

5.2.1 Assessing the reliability of disclosure indices

Hassan and Marston (2010) state that reliability is related to consistency. Consistency can be measured using internal consistency tests as the most common form to examine reliability. In this study, two tests are applied: correlation coefficients and Cronbach's alpha.

5.2.1.1 Correlation coefficients

Correlation coefficients help to measure the internal consistency between items in each CIR component and the total index of each group and the consistency between CIR components as well. This study conducts two correlation methods to fulfil this goal: Pearson's product moment correlation and Spearman's rank order correlation coefficients. The results reveal a significant correlation between all the items of each component and the total index of each group in both correlation methods (see appendix 7).

5.2.1.2 Cronbach's alpha

One of the most commonly used statistics to measure reliability is Cronbach's alpha. Many studies use Cronbach's alpha to test inter-item correlation and assess the reliability of a measurement instrument (Sekaran, 2003). This study examines the internal consistency for each CIR component by computing the Cronbach's alpha for each component. The results are presented in table 5-1.

Table   5-1: Cronbach's alpha for CIR total and components

CIR Components	Number of items	Cronbach's alpha
Total	196	.917
Content	70	.861
Presentation	26	.895
Timeliness	18	.905
Usability	54	.915
Audit	28	.909

From Table 5-1 it can be seen that all CIR components have a high Cronbach's alpha (86% and above). It is considered that a high value of Cronbach's alpha indicates a better reliability (Sekaran, 2003; Saunders et al., 2012). An alpha value over 0.7 suggests that the internal consistency reliability of the disclosure index is acceptable (Hair et al., 2009). The results, as shown in the table, approve a high internal consistency between the items of each component index and the total of this sub-index and between all these items and the CIR total index. Hence, it can be confirmed that the indices of the CIR total and its components are reliable in the present study. However, validity tests should be conducted along with reliability tests to assure the goodness of a measure.

5.2.2 Assessing the validity of disclosure indices

The constructed disclosure indices are valid if they measure what is intended to be measured. This study uses two main methods to evaluate the validity of disclosure indices, namely content and construct validity.

5.2.2.1 Content validity

Content validity is supposed to confirm that all the included items in the indices are adequate and represent the studied subject. This study uses two ways to determine the content of the disclosure indices. First, the websites of SLC are visited to check the applicability of the indices' items, which were constructed from the prior literature, and to ensure they are relevant to the Saudi context. Second, a checklist of disclosure items is sent to six persons in academia in the field of accounting and seven company administrative staff in three different countries (Saudi Arabia, Egypt, UK) to seek their opinions regarding the included items and the appropriateness of these items to the research questions and objectives.

5.2.2.2 Construct validity

Construct validity focuses on the consistency between the results obtained from disclosure indices and the theories in which the test is designed (Sekaran, 2003). That is, determining the construct validity means that the obtained results are consistent with the results of prior research that employs the same theories for the same methods of measuring the indices. Therefore, this study evaluates the indices' validity by assessing both the correlation between the CIR total and the total index of each component and the correlation between indices of CIR components and some key company characteristics variables explored in most of the previous studies. Table 5-2 shows the correlations between total index of each CIR component and CIR total, as well as between each component.

Table 5-2: The correlations between CIR components

CIR components	correlation method	CIR total	CIR content	CIR presentation	CIR timeliness	CIR usability
CIR content	Pearson Correlation	.984***				
	Spearman's rho Co	.959***				
CIR presentation	Pearson Correlation	.899***	.859***			
	Spearman's rho Co	.856***	.784***			
CIR timeliness	Pearson Correlation	.822***	.787***	.682***		
	Spearman's rho Co	.860***	.807***	.680***		
CIR usability	Pearson Correlation	.854***	.791***	.765***	.755***	
	Spearman's rho Co	.892***	.799***	.781***	.744***	
CIR audit	Pearson Correlation	.913***	.900***	.813***	.628***	.643***
	Spearman's rho Co	.784***	.791***	.623***	.643***	.589***

***. Correlation is significant at the 0.01 level (2-tailed).

Table 5-2 reveals that there is a high and significant correlation between the CIR total and each component in both correlation methods, indicating that each component interprets CIR total efficiently and effectively. It can be assumed that this high correlation shows that the disclosure strategies for SLC over the different components of CIR are similar (Cheng and Courtenay, 2006). Furthermore, there is a great interrelationship between CIR components in the Saudi context, as evidenced by the significant correlation between them. To affirm the construct validity of disclosure indices, another correlation analysis was conducted between CIR components indices and several of the company characteristics tested in prior studies. According to the majority of disclosure literature, which finds that firm size is a key factor in determining disclosure level, the current study chooses this variable to test the validity of the disclosure indices in addition to audit type and dividends, which have been documented in many studies (e.g. Brudney, 1980; Wallace and Naser, 1995; Archambault and Archambault, 2003; Xiao et al., 2004; Trabelsi and Labelle, 2006; Al-Shammari, 2007; Kelton and Yang, 2008; Hussainey and Walker, 2009; Adjaoud and Ben-Amar, 2010; Albassam, 2014). Table 5-3 presents the result of the correlation between the indices of CIR components and these variables.

Table 5-3: The correlation between the indices of CIR components and some company characteristics

CIR components	Firm size		Audit type		Dividends	
	Pearson	Spearman	Pearson	Spearman	Pearson	Spearman
CIR TOTAL	.583***	.667***	.262***	.290***	.296***	.333***
CIR content	.549***	.616***	.249***	.290***	.288***	.311***
CIR Presentation	.572***	.620***	.186**	.224***	.314***	.328***
CIR timeliness	.551***	.573***	.299***	.293***	.354***	.354***
CIR usability	.612***	.582***	.324***	.287***	.230***	.233***
CIR Audit	.442***	.478***	.163**	.246***	.220***	.195**

***. Correlation is significant at the 0.01 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed).

Table 5-3 shows that all the components of CIR are significantly correlated with the three company characteristics in both the Pearson and Spearman correlation methods. These results agree with most of the prior studies that used a constructed-disclosure index to measure the impact of different explanatory variables on disclosure.

Based on the above discussion, it can be stated that the indices of CIR components have a substantial degree of reliability and validity. The results reveal that these indices are accurate measures of CIR practices with high levels of consistency. This can provide more confidence for the measurement power of these CIR indices and more credibility for the outcomes deduced from such indices. The next section reviews the extent of CIR total in the Saudi context.

5.3 The extent of CIR total

The extent of CIR total is examined for 170 Saudi listed companies (SLC). In order to measure the extent of CIR total, an unweighted checklist containing 196 items is constructed. Table 5-4 displays the descriptive analyses of CIR total.

Table 5-4: Descriptive Statistics for CIR total

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
CIR	170	.110	.720	.5157	.1593	-.927	-.336

As indicated in Table 5-4, the mean CIR is 51.57% in 2014, which suggests a moderate overall extent of CIR. This can be attributed to the voluntary nature of CIR in the Saudi context. Moreover, the table shows a minimum score of 0.11 and a maximum of 0.72, which means that the range of the CIR index is relatively wide (61%). Furthermore, the negative skewness value indicates a pile-up on the right, and the negative kurtosis value indicates a flat distribution (Field, 2013). To shed more light on the understanding of the results of the CIR total extent in the Saudi context, a summary of the frequencies of CIR total scores is presented in Table 5-5.

Table 5-5: Frequencies of CIR total scores

CIR total score %	No. of companies	Cumulative no. of companies	%	Cumulative percent
0 – 9.9	0	0	0 %	0%
10 – 19.9	8	8	4.71%	4.7%
20 – 29.9	20	28	11.76%	16.5%
30 – 39.9	13	41	7.65%	24%
40 – 49.9	12	53	7.06%	31%
50 – 59.9	53	106	31.18%	62.4%
60 – 69.9	56	162	32.94%	95%
70 – 79.9	8	170	4.71%	100%
80 – 89.9	0	-	-	-
90 – 99.9	0	-	-	-
TOTAL	170	170	100%	100%

As shown in Table 5-5, 53 companies (31%) score below 50%, while the majority of the companies (109 companies) score between 50% and 70%, which is reflected in the negative value of the skewness. This indicates a moderate internet usage as a disclosure means in the Saudi context, which might be due to the rapid expansion of internet usage in Saudi Arabia. In addition, this indicates that SLC are aware of the importance of the internet as a tool for disclosing information. However, a few companies scored above 70% (only 8 companies), which reveals that more attention should be paid to the effective use of the internet as a disclosure tool. However, none of the sample companies satisfied 100% of the 196 index items, thereby highlighting the opportunity for further improvement in CIR practice in Saudi Arabia.

Noticeably, only one company, namely the Umm Al-Qura Cement Company, discloses less than 15% of the items included in the index (11%).

Almost all the Saudi listed companies (99.4% or 170 company out of 171 list companies)[5] have a website, clearly showing that although the Saudi market is an emerging market, it reflects the growing interest in the use of internet disclosure among Saudi companies. Comparing this percentage with the international context, many previous international studies have demonstrated various percentages of companies having a website. The IASC published a study, Business Reporting on the internet (1999), to examine the current level of internet reporting and the actual practice of companies' reporting around the world. Using a survey of a total of the 660 largest firms listed by 22 countries, the study reveals that 86% of these firms had a website, though they varied in the level of reporting from high levels in most developed countries (100% for the USA, Canada, Sweden and Germany) to relatively low levels in developing countries (53% in Chile, for instance). Moreover, Craven and Marston (1999) conducted a study with a sample of the 206 largest UK companies listed by market capitalization in the Financial Times and found that 153 (74%) of the sample companies had websites or home pages on the internet. Xiao et al. (2004), using a sample of 300 largest Chinese companies, found that 203 (68%) companies have an accessible website. In Ireland, Brennan and Hourigan (2000) found that only 37% of the sampled companies have a website, in Gulf Co-operation Council countries the percentage was 39% (Ismail, 2002), in New Zealand 54% (Oyelere et al., 2003), in Spain 32% (García-Borbolla Fernández et al., 2005), in Jordan 45% (Momany and Al-Shorman, 2006), in Malaysia 47% (Hamid, 2005) find that percentage is 40%. In Egypt, Aly et al. (2010) revealed that nearly 69% of the sampled companies have websites, while Ahmed et al. (2017) reported that 120 (69.8%) of the surveyed companies in 2010 and 119 (69.6%) of them in 2011 have usable websites. Furthermore, , Dolinšek and Lutar-Skerbinjek (2018) conducted a study using a sample of 192 large companies in Slovenia. They found that 52% of the sampled companies use IFR.

Regarding the Saudi context, Tawfik (2001) surveyed 69 joint-stock companies (listed and unlisted) in Saudi Arabia and found only 6 companies utilizing the internet for the reporting of financial information (9%), while 49% of all SLC had a website as reported by Abu Al-Azm

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[5] Bishah Agricultural Development Company does not have a website, this company with accumulated losses of 100% or more of its capital according to Tadawul website. This company has been excluded from the current study's sample.

(2001). Al-Saeed (2006b), examines CIR using a sample of 46 Saudi firms. The study shows that nearly 87% of sampled companies have websites. Al-Nodel and Hussainey (2006) finds that 75% of listed companies on the Tadawul website have an accessible website. Hussainey and Al-Nodel (2008) report that only 64 company (83%) have a website from the total 77 companies listed at that time. Al-Motrafi (2008) concludes that 84% of all Saudi companies have websites and 93% of the listed companies have an internet presence. Based on the above Saudi results, it can be concluded that there has been a noticeable increase in companies that have a website in the Saudi market over the last few years, which reflects the increased interest in CIR by Saudi listed companies over the recent period. According to the respondents in Alshowaiman' study (2008), internet reporting is considered a very important channel for users in Saudi Arabia because many users are no longer interested in reading the newspaper and they depend more on CIR to deal with financial statements easy and economically. To add a more in-depth understanding to the extent of CIR, the extent of CIR components is demonstrated in detail in the next section.

5.4 The extent of corporate internet reporting components

It might be useful to analyse the extent of each component of CIR. Five main components of CIR are examined in this study: content, presentation, timeliness, usability and audit. Table 5-6 presents the variation in the level of scores of these components.

Table 5-6: Descriptive analyses for CIR components indices

	Content		Presentation		Timeliness		Usability		Audit	
Mean	0.5548		0.4464		0.4288		0.5491		0.4737	
Minimum	0.029		0.115		0		0.241		0	
Maximum	0.80		0.81		0.78		0.78		0.68	
	Frequencies of CIR components indices									
CIR score %	No.	%	No.	%	No.	%	No.	%	No.	%
0 – 9.9	3	1.8	1	.59	5	2.9	0	0	36	21.2
10 – 19.9	13	7.7	10	5.9	19	11.2	0	0	2	1.2
20 – 29.9	14	8.2	18	10.6	28	16.5	4	2.4	3	1.8
30 – 39.9	9	5.3	17	10	27	15.9	8	4.7	3	1.8
40 – 49.9	9	5.3	42	24.7	13	7.7	35	20.6	4	2.4
50 – 59.9	18	10.6	68	40	36	21.2	69	40.6	21	12.4
60 – 69.9	59	34.7	12	7.1	29	17.1	38	22.4	101	59.4
70 – 79.9	43	25.3	1	.59	13	7.7	16	9.4	0	0
80 – 89.9	2	1.2	1	.59	0	0	0	0	0	0
90 – 99.9	0	0	0	0	0	0	0	0	0	0
TOTAL	170	100%	170	100%	170	100%	170	100%	170	100%

As indicated in Table 5-6, there is a variation in the level of information disclosed on the companies' websites. While the range of CIR content, presentation and timeliness almost varies

between 0 and 0.81, thus scoring the widest range, CIR audit ranges only from 0 to 0.68. CIR usability was the lowest range, scoring between 0.24 and 0.78. The highest mean disclosure score was content (55.48%) followed by usability with a slight difference (54.91%), which suggests that content and usability are the most important tools for CIR by Saudi listed companies, whereas the lowest score was timeliness (42.88%). It is worthwhile that the mean scoring of all CIR components are close to each other, reflecting the moderate disclosure of CIR components. Moreover, it is noticed that most SLC disclose on average 40-70% of the content (50.6%), presentation (71.8%), timeliness (46%), usability (83.6%) and audit (74.2%) information via the internet. Noticeably, not too many SLC (14% or less) score less than 20% of each of the CIR components' items (with the exception of audit, where 22% of SLC disclose less than 20%). This indicates the growing use of an online disclosure strategy for SLC and shows that there is a rational awareness of its importance for companies' stakeholders. Interestingly, no single company scored more than 81% for any of the CIR components, which shows the need for more emphasis on, and recognition of, the importance of CIR.

Due to the variation in the level of CIR components, more analysis is conducted for each component of CIR to gain awareness of the online disclosure practices of SLC. The following points present these components' analyses.

5.4.1 Content

The content checklist consists of 70 items measuring the CIR content of Saudi listed companies (SLC). It covers general corporate information (e.g. date company established and company profile), financial information (e.g. quarterly reports, annual report, financial statements and share price) and social responsibility (e.g. the existence of a social responsibility section, donation, and product quality and safety). The findings of the extent of CIR content are presented in appendix 8.

It is noticeable that most of the companies (72%) disclosed between 50% and 80% of content items, and only 3 companies (1.8%) scored less than 10% of content index items, which shows the alertness of SLC towards disseminating such information on their websites. The highest score was 80%, giving room for more improvement in companies' performance related to content disclosure.

Overall, the results indicate that the most frequently disclosed content items are those related to general company information. The first common items disclosed are date company established and company profile (99% each), followed by corporate citizenship (98%), services or products provided (98%), phone number for investors (96%), postal address for investors

130

(94%), news summaries (92%), and human resources information/employee profile (91%). At the other end of the spectrum, the least frequently disclosed items were mailing lists of the company's key personnel (7%), market share of key products (6%), the display of names and details of analysts following the company (3%), and privacy policy when personal information is required (2%). Some items were disclosed by only one company, which were text of speeches and presentations, monthly or weekly sales or operating data, earnings or sales forecast, and an exchange or a link to a currency converter site if financial information is presented in alternative currencies (1%). None of the sampled companies displayed financial information in alternative GAAP. The following section discusses some of these items in more detail, starting with the most commonly disclosed items then the more rarely disclosed ones, and compares the study results with the previous research (see appendix8 for CIR content items results).

The most frequently disclosed general information items were the date company established and company profile. A corporate profile details the history of the company as well as its geographical reach, company goals and objectives. The result shows that 99% of companies provided a company profile and the date company established online. This item has been the subject of some previous studies conducted in different parts of the world. For example, in developed countries, 94% of New Zealand companies offered a company profile and date of establishment (Oyelere et al., 2003), 96% of Malaysian companies did so (Khadaroo, 2005), as did 41% of the IASC sample (1999), 69% of the FASB (2000) sample, while in developing countreis 94.4% and 65% of the Egyptian companies according to (Elsayed, 2010) and (Ahmed et al., 2017) respectively and 80% of Saudi companies (Al-Motrafi, 2008). This comparison suggests that SLC appear to be recognizing the importance of offering such information to their investors and other users, and that this dissemination of information has improved in the last few years.

It can also be noticed that both corporate citizenship and services or products provided are disclosed by the majority of the companies (98%). These findings are consistent with prior studies in developed countries; for example, corporate citizenship was reported by Hindi and Rich (2010), who stated that 97% of the largest US companies disclosed corporate citizenship. Similarly, UK and Canadian companies scored 94% and 80%, respectively (Allam and Lymer, 2003) whereas 88% of Australian companies revealed it (Lodhia et al., 2004). The disclose of services or products is very frequently provided (98%), which is expected as some prior studies have argued that marketing services and products is deemed as the main reason to adopt internet disclosure (Xiao et al., 2000; Hassan et al.,1999) This result is consistent with the results of

some studies in the disclosure literature. In developed countries, Oyelere et al. (2003) report that 99% of New Zealand companies provide information about their services and products and 74% of US companies disclose this (FASB, 2000). While in developing country, 93.3% of Egyptian companies disclosed information about services or products provided (Elsayed, 2010). Al-Motrafi's study (2008) shows that 81% of Saudi companies disclosed this item, which might be influenced by the study sample that includes both listed and unlisted companies.

Regarding advertisements for the company's products or services, not surprisingly, 152 companies disclose such information (89%), which demonstrates that most of the companies use the internet as a means to advertise their services or products to customers. This finding is consistent with FASB (2000), which report that 84% of US companies disclosed this information via websites, which increased to 100% according to Hindi and Rich (2010).

The vision statement is one of the most common pieces of social information. Of the sampled companies, 134 (79%) disclose their vision statement via the internet. This finding is comparable to those of developed countries. For example, Lodhia et al. (2004), who indicate that 62% of Australian companies revealed this item, and Allam and Lymer (2003), who find that 94% of US companies disclose a vision statement, while the figures are 74% for the UK, 82% for Canada, 62% for Australia, and 43% for Hong Kong. However, Hindi and Rich (2010) report that 86% of the largest US companies disclosed such information in 2006, which increased to 97% in 2009.

Regarding contact details information, the result of the study reveals that 96% of companies provide a phone number for investors, and 94% disclose postal address for investors.

Some companies make a separate section for investor relations (84%) to ease obtaining the required information from the company's website. It can be seen that the majority of SLC realize the importance of contact details of their investor relation department by disclosing this information to their stakeholders. However, few companies provide the name of the investor relations officer and mailing list of the company's key personnel (18% and 7%, respectively).

Disclosing these items by SLC represents an advancement in CIR. Most of the companies in the developed countries disclose a separate section for investor relations to isolate the critical information from other general information. This isolation enables various stakeholders to obtain their required information efficiently and effectively. For example, Hindi and Rich (2010) find that 97% of US companies have a link to an investor relations section and 100% provide a phone number, postal address and email address. FASB (2000) reports that 67% have a direct link to investor relations and 56%, 62%, 54% provide email, phone number and postal

address, respectively, while 82% of Australian companies have a separate section for investor relations (Lodhia et al., 2004) and in Slovenia, 17% of the companies provide investor contacts (Dolinšek and Lutar-Skerbinjek, 2018). In the Saudi context, Al-Motrafi (2008) reveals that 69% of all listed and unlisted Saudi companies have an investor relations section. Alshowaiman (2008) reports that 65% of Saudi companies disclose a phone number and 61% a postal address. The results of the study show that SLC are close to their counterparts in the developed countries, and are much improved compared to the findings of Saudi companies from a few years ago. It is also remarkable that SLC disclose more contact details information than other developing countries; for example, in Egypt, Elsayed (2010) indicates that 13% of Egyptian companies have a separate section for investor relations, 18% provide email address, 12% the names of investor relations officers, 13% a phone number and 9% a postal address, Desoky (2009) reports that 33% of companies have investor relation section, while Arafa (2012) finds that 63% of Egyptian companies have an investor relations section, 18% an email address, 16% a phone number and 15% a postal address. Later, Ahmed et al. (2017) report that 11.7% of Egyptian companies disclose the names of investor relations officers, 14.6% email address, 8.7% phone number and 7.6% postal address. Xiao et al. (2004) reveal that 15%, 16% and 15% of Chinese companies disseminate email address, phone number and postal address, respectively.

It can be noted that information about board of directors (names, profile and classification) is disseminated by the majority of SLC (91%). This finding is consistent with the findings of developed countries. Hindi and Rich (2010), report that 95% of US companies disclose board of directors' and officers' names and profiles. Moreover, 79% of Irish companies show directors' names online (Smith and Peppard, 2005), 85% of UK companies display the experience of directors and executives (Abdelsalam et al., 2006) and 55% of German companies present directors' information (Marston and Polei, 2004). With similar percentages, the FASB (2000) reports that 71% of their sample offer board of directors' and officers' names and 64% of Malaysian companies offer the names and composition of their boards (Khadaroo, 2005). However, developing countries' studies indicate lower percentages than this study. Elsayed (2010) states that only 42% of Egyptian companies displayed names of board of directors and 14% gave profiles and classifications, while Al-Motrafi (2008) found only 8% and 7% of the sampled companies report education and experience of board directors, respectively. The high percentage showed by SLC can be related to the mandatory nature of disclosing such information (Article 9), which has taken place since the end of 2008. This

article requires the disclosing of the formation of the board of directors and the classification of its members.

Furthermore, risk management is one of the most common pieces of corporate governance information. 79% of SLC provide this information in their website. This high percentage reflects the desire of SLC to inform their investors about their corporate risks, showing that the company has full knowledge of the risks and has taken all the necessary actions to counter them. This might be linked to Article 10 of SCCG, which states that the board should disclose information about the strategy, the main work plans, and the policy related to risk management. This finding is much better than that by Aly (2008), who reports that 35.5% of Egyptian companies reveal such information, Ahmed et al. (2017) who mention that only 20% of the companies do so and Despina and Demetrios (2009), who find that only 10.6% of Greek companies provide information about corporate risks.

Regarding financial information, it can be stated that there is a considerable variation in the financial information disclosed by SLC, ranging between 92% and 0%. The most common item disclosed was news summaries (92%). This finding indicates that most SLC websites contain a section for a news summary, which is a vital part of the corporate website since it provides news about the company and keeps the website users informed about the important events of the company. This result is consistent with Hindi and Rich's (2010) finding that 99% of US companies disclose news summaries as well as that of Despina and Demetrios (2009), who find that 93% of Greek listed companies disseminate this item via the internet. However, Oyelere et al. (2003) state that 67.5% of New Zealand companies provide a news summary and only 42% and 40% of US companies (FASB, 2000) and Egyptian companies (Arafa, 2012) do so, respectively.

Moreover, it was found that 140 companies (82%) provide the date of financial year-end; providing such information is helpful since financial reporting and budgeting conform to this date. In addition, many of the compensation schemes and bonuses in most companies are measured and linked to the timing of the financial year. Oyer (1998) studied the effect of financial year-ends on US companies, concluding that revenue seasonality and price are affected by year-end timing. Alshowaiman (2008) found that 43% of SLC disclosed this item at that time, indicating the extent of improvement when comparing this result with the results of the current study.

In addition, it was found that 134 of SLC are keen to disclose earning release on their websites (79%). However, only 7.5% of Saudi listed and unlisted companies (Al-Mulhem, 1997), 37% and 8% of Egyptian companies (Aly, 2008; Ahmed et al., 2017) and 31% of Malaysian

counterparts (Hamid, 2005) disseminate this item via the internet.

A remarkable percentage of SLC discloses information about which GAAP basis is used in the year reported and the usage of comparative figures are at the same percentage (78%) which is comparable to those of developing countries. This percentage is close to the finding by Xiao et al. (2004) that 69% of Chinese companies provide the GAAP basis used, while Aly (2008) reveals that only 37% of Egyptian companies provide information about which GAAP is used and 55% disclose comparative figures. In addition, Erer and Dalgic (2011) report that 9% of Turkish companies use comparative figures on their websites. Al-Mulhem (1997) found that 100% of Saudi listed and unlisted companies disclose comparative figures in their reports. This high percentage can be attributed to the sampled companies and the fact that Al-Mulhem's study was concerned with paper-based disclosure.

With respect to the financial statements, balance sheets and income statements of the current and last years are, to some extent, the most commonly disclosed statements (76%), followed by cash flow statements (71%, 72% current and last years, respectively) and, lastly, statements of changes in stockholders' equity (70%, 71% current and last years, respectively). These findings are comparable with those by the FASB (2000), which finds that 74% of US companies disclose balance sheets in their websites, 70% give income statements and cash flow statements, and 66% provide statements of changes in stockholders' equity. However, Allam and Lymer (2003) report considerably higher percentages, which might be due to the market capitalization criterion that they choose to select sampled companies. For example, in the UK, 98% of companies disseminate balance sheets and income statement, 96% disclose cash flow statements, and 92% disclose statements of changes in stockholders' equity, while 100% of Canadian companies disclosed all the statements and 90% of Hong Kong companies provide balance sheets, income statements and cash flow statements, and 88% provide stockholders' equity statement. Recently, Dolinšek and Lutar-Skerbinjek (2018) find that, in Slovenia, 99% of the companies provide balance sheets and income statements and 95% provide both cash flow statements and statements of changes in stockholders' equity. Previous studies on developing countries indicate lower percentages for providing financial statements than the current study. Xiao et al. (2004) find that Chinese companies disclose both balance sheets and income statements at the same percentages (44% and 64% for current and past statements, respectively), while cash flow statement were 42% for the current year and 64% for the past year, and 69% of the companies disclose current stockholders' equity statements. Moreover, only 27% of Egyptian companies disclose balance sheets of the current year and 26.7%, 21%, 20% disclose income statements, cash flow statements and stockholders' equity

statements, respectively (Elsayed, 2010). Similar percentages were found by Ahmed et al. (2017) in Egyptian companies which are (22%, 21.6%, 19% and 18% respectively).

Likewise, 72% of SLC provide annual reports for the current year and 70% provide annual reports for the past year. These results are slightly low compared with those of developed countries. Kelton and Yang (2008) state that 93% of NASDAQ listed companies disseminate annual reports for the current year and around 90% provide last year's report as well. Similarly, Marston and Polei (2004) find that 89% of Dutch companies disclose such reports, Erer and Dalgic (2011) report that 89% and 87% of Turkish companies provide current and past year reports, respectively and Dolinšek and Lutar-Skerbinjek (2018) find that 96% of Slovenian companies disclose annual reports for the current year and 60% for previous periods. In contrast, a few companies in the developing countries disseminate these reports: 33% in China (Xiao et al., 2004), 45%, 8% in Egypt (Arafa, 2012; Ahmed et al., 2017), and in Saudi Arabia 4% for the current year and 31% for the past year (Alshowaiman, 2008). Moreover, it was found that 76% of the sampled companies disclose excerpts of financial reports, which is still comparable to Arafa (2012), who reports that 87% of Egyptian companies disclose excerpts of their financial reports.

Moreover, it was found that 76% of SLC declared their dividend payout policy. Disclosure of dividend payout policy helps to alleviate the information asymmetry between management and shareholders (Adjaoud and Ben-Amar, 2010) and benefits investors to improve their decision-making. Article 43 (part 8) of Tadawul's Listing Rules states that the annual board report must contain a description of the company's dividend policy. This result is in line with Albassam's study (2014), which finds that on average 77% of SLC disclose their dividend policy. However, Kelton and Yang (2008) reveal that only 23.2% of NASDAQ listed companies provide such information, and Erer and Dalgic (2011) show a similar result for Turkish companies (23.1%). With regard to performance analysis, 125 companies (74%) provide this analysis on their websites. This finding is comparable to Xiao et al. (2004), who find that 69.5% of Chinese companies disclose their performance analysis. Similarly, Kelton and Yang (2008) report that 69% of US companies do so. However, Egyptian companies show a lower percentage (15%) than that in the current study (Elsayed, 2010).

On the other hand, the present study finds that some items related to CIR content are rarely disclosed by SLC. It is noticeable that none of the sampled companies in the current study display financial information on alternative GAAP. All the companies in Saudi Arabia provide financial information based on domestic accounting standards. Few studies have examined this feature. For example, Jones and Xiao (2004) conclude that by 2010 more companies will

disclose reports in multiple measurements, currencies and GAAPs. FASB (2000) report that only 6% of their sample offered financial information in alternative GAAP and Ahmed et al. (2017) find 2% of Egyptian companies do so. Although Al-Motrafi (2008) finds that 16% of Saudi companies report their financial information in alternative GAAP, this difference might be attributed to the inclusion of unlisted companies in Al-Motrafi's sample and the fact that foreigners are not allowed to invest in the Saudi Exchange Market (Tadawul). In May 2015, foreigner investors were allowed to invest in Tadawul, which is expected to support foreign listing and, hence, encourage companies to display financial information in alternative GAAP. Since the internet facilitates the global dissemination of corporate information, users need comparability based on different GAAP.

Moreover, the rarest disclosed financial items by SLC are monthly or weekly sales or operating data, earnings or sales forecasts, and exchange or a link to currency converter site if the information is given in alternative currencies. Only one company discloses each of these items (1%) in different industries. The Saudi Real Estate Company in the real estate development sector is the only company providing information about their monthly or weekly sales or operating data. This finding is close to that of Xiao et al. (2004), who find that 3% of Chinese companies disseminate such information. Kelton and Yang (2008) report that 7% of US sampled companies disclose this item, while this percentage raises to 12% in the FASB's study (2000).

Earnings or sales forecasts were disclosed only by Takween, an industrial investment company (1%); this result is confirmed by Xiao et al. (2004), who state that 1% of companies in China provide this item, while Matherly and Burton (2005) find that 16% of US companies do so. This is an acceptable differentiation due to the differences between developing and developed countries.

With respect to an exchange or a link to currency converter site if the information is given in alternative currencies, one insurance company (1%) provides this item, namely Solidarity Takaful. This percentage is still comparable to Arafa (2012), who finds that 1.7% of Egyptian companies disclose this information on their website. Al-Motrafi (2008) also reports that 1% of Saudi companies reveal such information, while 8% of UK companies (Abdelsalam et al., 2006) and 83% of Slovenian companies do so (Dolinšek and Lutar-Skerbinjek, 2018).

In addition, only two SLC disclose text of speeches and presentations, which is a low percentage (1.2%) compared with prior studies. For example, 10% in the US (FASB, 2000), 15% in NASDAQ listed companies (Kelton and Yang, 2008), and almost 5% in China (Xiao et al., 2004) provide this item via the internet. A similar result was found regarding explaining

privacy policy if personal information is required (2%) and displaying the names and details of analysts (3%). The previous studies are not closely comparable with the current study; for example, in terms of explaining privacy policy Abdelsalam et al. (2006) report that 75% of their sample provide this information, in comparison to 13% according to Arafa (2012) and 12% according to Elsayed (2010). The same situation applies to displaying the names and details of analysts; Kelton and Yang (2008) find that 63% of US companies reveal this item, it is 17% in the FASB's study (2000) and 34% of German companies do so in Marston and Polei's study (2004). However, Al-Motrafi's results (2008) are consistent with the current study (0% and 2%, respectively) since both studies are conducted in the Saudi context whereas the other studies included developed countries and targeted the largest companies.

Only 10 companies (6%) provide industry statistics or data on their websites. This finding is consistent with Allam and Lymer (2003), who find the 4% in US, 6% in UK, 8% in Canada, and 2% of companies in Australia disseminate these statistics and data on their websites. However, the current study's percentage is low compared with other studies; for example, the FASB (2000) finds that 13% of the sampled companies disclose this information via the internet, and Elsayed (2010) reports that 15% of Egyptian companies reveal industry statistics. More recently, Hindi and Rich (2010) find that 100% of their sampled companies disclose such information.

Similarly, 6% of SLC supply information about the market share of key products. This item has been examined in several studies reporting different results. For example, Xiao et al. (2004) find that no Chinese companies provide such information, while Matherly and Burton (2005) report that 40% of US sampled companies disclose the market share of their key products, while only 8%, 19% of Egyptian companies offer this information according to Aly (2008) and Elsayed (2010), respectively.

Moreover, a minority of the companies (7%) included in this study offered information regarding the mailing list of the company's key personnel. The finding regarding mailing list again varies among developed countries in the previous studies. While the highest percentage was 80% in Germany (Marston and Polei, 2004), followed by 64% in the US, 64% in the UK, 50% in Canada, 52% in Australia and 14% in Hong Kong (Allam and Lymer, 2003) while only 8% of Irish companies disclose the mailing list (Smith and Peppard, 2005). In developing countries, Xiao et al. (2004) find that only 3% in China provide a mailing list; in contrast, this was given by 58% of Egyptian companies (Aly, 2008).

Furthermore, only 8% of the sampled companies have a facility to compare company share prices with peers and the industry on their websites. This finding is confirmed by Al-Motrafi

(2008), who found that 7% of SLC provided this facility at that time. However, previous studies indicate various percentages of disclosing such information; for example, Abdelsalam et al. (2006) find that 58% of UK companies provide it and Arafa (2012) reports that none of the Egyptian companies offer this facility.

Only 25 companies (15%) in the current study sample display the names and details of the Sharia[6] committee. All these companies belong to the financial sector (all 12 banks and 13 insurance companies). Saudi Arabia as an Islamic country and adopts a legal system that is derived from Islamic law (Sharia) (Hussainey and Al-Nodel, 2008); hence, SLC endeavour to attract investors by showing their compliance with Sharia through the existence of a Sharia committee and by disclosing details regarding this committee on their website, under the consideration that the main role of the Sharia committee is to ensure that the company is following Islamic Sharia in their transactions. To the best of the researcher's knowledge, Al-Motrafi's study (2008) is the only one that has examined the disclosure of details of Sharia committees on the internet. His study reveals that 5% of Saudi companies provide information about this committee.

Furthermore, another item unique to the current study is the provision of social media links. Not surprisingly, the majority of SLC (65%) provide a link to one or more social media accounts (e.g. Facebook, Twitter, YouTube, etc.). Recently, social media has been widely used, especially in the Saudi society, which is one of the largest social media markets in the Middle East. According to Al-Khalifa and Garcia (2013), statistics show that 47.5% of the Saudi population is engaged on the internet, whereby 82% of these internet users use Facebook and 80% utilize YouTube. The number of Twitter users in Saudi Arabia has increased from June 2012 to June 2013 by 3000% (Al-Khalifa and Garcia, 2013), Saudi users, according to the *Economist*, have the world's highest Twitter penetration[7]. Therefore, Saudi companies are trying to keep pace with the technological revolution to easily reach out to investors and satisfy their needs through the most widespread advertising channels on social media. To the best of the researcher's knowledge, no single study so far has examined this item.

Based on the above findings, it can be indicated that SLC have begun to recognize the importance of disclosing content items and they seem to be in line with their counterpart

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[6] Sharia is "the Islamic law of human conduct, which regulates all matters of the lives of Muslims. It is based on God's holy word in the Qur'an, the deeds and sayings of the prophet Mohammed (Sunah), and the consensus of Islamic religious scholars" (Maali et al., 2006, P.267)
[7] http://www.statista.com/statistics/284451/saudi-arabia-social-network- penetration/ Accessed on 15 March 2016 on 3:35

companies in the developed countries, which might be linked to the issuing of the Saudi corporate governance code in 2006 and its mandatory amendments in 2010. Most of the content items (47) are disclosed on the website of more than half of SLC, and the content disclosure level was below 10% in only 11 items. Moreover, some items are disclosed by almost all the companies, such as company profile and date company established. At the other end of the spectrum, the current study identifies some areas where content disclosure needs more attention. A few items need to be considered, as none or just one company disclosed them, such as earnings or sales forecasts and monthly or weekly sales or operating data. In general, content disclosure demonstrates a remarkable improvement compared with previous studies in the Saudi context (for example, Al-Motrafi, 2008; Alshowaiman, 2008). Assessing the content level of the information disclosed on the SLC websites answers the first sub-question 1.1. The next section shows in detail how SLC present these various types of information on their websites.

5.4.2 Presentation

The second part of the disclosure index consists of 26 items to measure the CIR presentation index. The results of this index are illustrated in appendix 9.

Surprisingly, disclosing most of the presentation items is either high, that is, 76% or more of the companies provide them, or low to the extent that only 6% or less of the companies disclose some items, leaving some room for in-between. It can be noticed that 12 of the presentation items are disclosed by 67% or more SLC; on the other hand, 9 items are disclosed by less than 6% of the companies and 5 items are disclosed by 10% to 48% of companies.

The most common presentation item disclosed was a hyperlinked table of contents. 169 companies (99%) provide a hyperlinked table of content via their website. This finding is similar to those of developed countries. It is consistent with the finding of Kelton and Yang (2008), who find that 98.6% of US sampled companies disclose it. Erer and Dalgic (2011) report a close percentage for Turkish companies (83%), while Oyelere et al. (2003) find that 63% of New Zealand companies provide such information. Dividing a page into frames is also another popular presentation item and it was disclosed at the same percentage (99%) by SLC. This result again is confirmed by Hindi and Rich (2010), who state that 100% of US companies provide frames and Marston and Polei (2004) who find that, in Germany, 98% of companies do so. In contrast, Xiao et al. (2004) indicate that only 7% of Chinese companies use frames on their websites and 26% do so in Egypt according to Aly (2008), while Ahmed et al. (2017) report that none of the Egyptian sampled companies use frames.

140

Regarding presenting a multilingual home page, it was found that 89% of sampled companies (151) provide their home page in both Arabic and English, since the English language is the dominant internet language. Furthermore, just 11 companies offer an Arabic-only website and 8 companies present an English-only website. Many previous studies examined the use of more than one language in disclosing information via the internet; for example, Hindi and Rich (2010) state that in the US 100% of the companies use multiple languages, while 95% do so in Germany (Marston and Polei, 2004) compared to 88% in Greece (Despina and Demetrios, 2009), 81% in Turkey (Erer and Dalgic, 2011), 47% in China (Xiao et al., 2004), 37% in Egypt (Elsayed, 2010) and 61% in Saudi Arabia (Al-Motrafi, 2008). The current study result is close to those of developed countries; it shows that the Saudi companies are keen to enhance their presentation of disclosed information using multiple languages, which makes the website more user-friendly. In addition, the presentation of disclosed information in English, which is the most commonly used language on the internet, by 94% of the sampled companies indicates the awareness of those companies of the globalization of the internet as a channel to attract investors.

One of the most frequently disclosed items is the existence of clear boundaries for annual reports. The absence of boundaries on web pages could obstruct the distinguishing financial information from other corporate information (Debreceny et al., 2002). The result of this study reveals that the majority of SLC (82%) provide boundaries for annual reports, which is higher than the results of previous studies. The FASB (2000) finds that 33% of sampled companies offer clear boundaries for annual reports, while Marston and Polei (2004) mention that only 5% of German companies provide this feature. However, 30% of Chinese companies (Xiao et al., 2004) and 34% of Egyptian companies (Aly, 2008) do so. These low percentages might be reasoned to the time gap between these studies and the current study. Moreover, clear direction for annual reports was among the popular disclosed items. It was found that 138 companies (81%) have a clear direction for their annual reports on the websites. Alshowaiman (2008) reports this percentage as 31%, which reflects the improvement of companies' performance.

Furthermore, it can be seen that most SLC (79%) offer hyperlinks to data on a third-party website. This finding again shows the noteworthy performance of the sampled companies compared with some prior studies. For example, the FASB (2000) states that 18% of US sampled companies provide this hyperlink, 21% in Turkey (Erer and Dalgic, 2011), 16.6% in Greece (Despina and Demetrios, 2009) and none of the SLC offered such links in 2005 (Alshowaiman, 2008).

Regarding the format type of annual reports, Parker and Carey (2003) mention that, in order to enhance transparency, companies need to present reports in multiple formats to make the disclosed information more usable and valuable. The PDF format was found to be the most common format for the web version of annual reports used by SLC. This format type allows users to download or print the disclosed information easily. In the current study sample, 129 companies (79%) provide an annual report in PDF format, which is in the middle rank compared with prior studies. For example, Marston and Polei (2004) report that 98% of German companies disclosed their annual reports in PDF format, while 61% in the US (FASB, 2000), 64% in the UK offer their annual reports as PDF files (Abdelsalam et al., 2006) and 100% in Slovenia (Dolinšek and Lutar-Skerbinjek, 2018). In developing countries, Xiao et al. (2004) reveal that 29% of Chinese companies use the PDF format to provide annual reports, as do 43% and 27% of Egyptian companies (Arafa, 2012; Ahmed et al., 2017), while only 31% of Saudi companies did so in 2006 (Al-Motrafi, 2008). On the other hand, HTML format was less commonly used on Saudi companies' websites, and only 17 SLC (10%) offer their reports in HTML format. In terms of developed countries, Allam and Lymer (2003) state that 2% in the US, 2% in the UK, 0% in Canada, 2% in Australia and 8% in Hong Kong use HTML, while Marston and Polei (2004) find that 57% of German companies offer this format and the FASB's study reports a similar result (59%). The current study's finding is relatively comparable to that of Dolinšek and Lutar-Skerbinjek (2018), who state that 9% of Slovenian companies use the HTML format and Ahmed et al. (2017), who report the same percentage. Al-Motrafi (2008) reports that 15% of Saudi companies use it and Elsayed (2010) finds that 9% use it in Egypt, while Xiao et al. (2004) find that HTML is more frequently used by Chinese companies (49%). Not surprisingly, other format types were rarely used in SLC websites. Only one company (0.6 %) provides reports in XLS or similar format that can be processed and none of the sampled companies use the XML format. These types of format are in general rarely used in most countries. For example, Allam and Lymer (2003) find that only 2% in the US and UK use the XLS format and did not found it at all in Canada, Australia or Hong Kong. In addition, Despina and Demetrios (2009) report that 5% and 1.3% of Greek companies used the XLS and XML formats, respectively. Xiao et al. (2004) find that only 0.5% of the sampled companies offer reports in a format that can be processed, Desoky (2009) fInds 2%, and it was 14% in Marston and Polei's study (2004). In light of these results, it can be concluded that SLC and their counterpart companies have not yet realized the advantages of using XML, XLS or other formats that can be processed and they still provide their reports in the PDF format.

Regarding the use of technical means inside annual reports. It was found that 17% of SLC

provide hyperlinks inside the annual report, one company offers flashes and none of them present video or audio files in the annual report. Prior studies report different results in respect of presenting information in multimedia format; Marston and Polei (2004) find that 30% of their sample have hyperlinks inside the annual report, 9% provide flashes and 50% offer video and audio files on their websites, whereas Kelton and Yang (2008) mention that 50% of the companies use hyperlinks inside the annual report, 82% present audio files and only 2.5% have video files on the website. However, a lower percentage was reported by Dolinšek and Lutar-Skerbinjek (2018), who report that 8% of Slovenian companies have an interacive annual report and Despina and Demetrios (2009), who state that only 4.6% and 8% of Greek companies provide audio and video files, respectively. Similarly, the results of FASB (2000) study show that 7% of companies' websites include audio files and 6% include video files. The same percentage (7% for video or audio files) was found on Turkish companies' websites as well (Erer and Dalgic, 2011). Moreover, the lowest percentages were reported in developing countries; for example, in China 2% of the companies use flashes, 0.5% use audio files and none use video files or hyperlinks inside the annual report (Xiao et al., 2004). In Egypt, the result was 3.5% for video or audio files (Arafa, 2012) and 2% for hyperlinks inside annual reports (Desoky, 2009), and in Saudi Arabia none of the sampled companies use video or audio files and only one company uses both of flashes and hyperlinks inside the annual report (Alshowaiman, 2008). Although internet reporting offers the advantages of presenting information in more dynamic forms using multimedia technology, the results reveal that disclosing this type of information is rarely used in annual reports via companies' websites in SLC, and still very low in general.

Providing slide presentations (PDF/ PPT) was one of the less common presentation items. Although internet reporting allows companies to improve their ways of disclosing information using visual aids such as slide presentations, only 10 companies (6%) offer such slides to users of their websites. This result is considered low compared with previous studies; for example, Abdelsalam et al. (2006) find that 75% of sampled companies in the UK offer this type. However, this percentage is much lower in Egypt at 11.4% (Aly, 2008) and Saudi Arabia at 12% (Al-Motrafi, 2008).

One of the least frequently disclosed items is the display of financial information in alternative currencies, whereby only 3% of sampled companies present this feature. Although Jones and Xiao (2004) expect that by 2010 companies will be using multiple measurements, languages, currencies and GAAPs in their internet reporting, offering such reports are have still been rarely provided in previous studies. The current study finding is closely comparable with the study

by Abdelsalam et al. (2006), who report that 10% of the sampled companies include reporting in alternative currencies on their website, Al-Motrafi (2008), who find that only 1% of Saudi public companies present this feature and Ahmed et al. (2017), who report that only 0.6% of the Egyptian companies do so.

Conference calls are considered one of the most important and valuable forms of technology-aided dissemination tools via company's website (Frankel et al., 1999). Offering a conference call via the internet enables disclosed information to spread widely, increasing accessibility to a wider range of investors (FASB, 2000). It was found that only one company of the SLC provides conference calls. Providing such a tool is more often used by companies in developed countries; Frankel et al. (1999) state that 6.2% of the sampled companies in the US use conference calls and Kelton and Yang (2008) find that 82% of their sample offers conference calls. However, this practice in developing countries still lags far behind their counterparts; for example, Elsayed (2010) find that only one company (0.6%) offers conference calls, which increases to 2.9%, 3% and 4.8% according to Ahmed et al. (2017), Aly (2008) and Arafa (2012), respectively.

Based on the above findings, it can be concluded that there is a variety in the percentages of disclosing presentation items. The majority of SLC (over 70%) disclosed almost half of the presentation items, showing their awareness of the importance of utilizing different presentation tools, however, the percentages of the remaining items are relatively low, especially those items related to the use of multimedia and high-tech formats. These technology-aided features were rarely used; for example, none of the sampled companies provide reports in XML or use video or audio files in the annual report, and merely one company uses each of these features: reports in XLS format or other processible format, using flashes in the annual report, and conference calls. These areas need more attention from SLC in order to satisfy the needs of investors and other users of their websites and obtain the most advantages of using the internet to disclose information. The previous discussions clearly answer the second sub-question 1.2 about the presentation of the disclosed information on the SLC websites.

Investors and other internet users regard the internet as an opportunity to enhance corporate disclosure and expect a speed of delivery of information, whereby the most recent information should be available on the corporate's website. The next section discusses the extent of CIR timeliness in the Saudi context.

5.4.3 Timeliness

Providing timely information is one of the most important benefits of internet disclosure; this is handled in the third part of the disclosure checklist, CIR timeliness. CIR timeliness consists of 18 items; appendix 10 presents the disclosure of each item of this index. The most commonly disclosed item is the date of the last website update; 80% of the SLC clearly provide this date. Abdelsalam and El-Masry (2008) report that only 7% of Irish companies present this item, compared to 9% in Germany (Marston and Polei, 2004), 13.6% in Greece (Despina and Demetrios, 2009), 4.6% in Turkey (Erer and Dalgic, 2011), 2% in China (Xiao et al., 2004), 20% in Saudi Arabia (Al-Motrafi, 2008) and in Egypt this percentage increases from 16% (Elsayed, 2010) to 55% (Arafa, 2012). The finding of the current study reveals that the percentage for SLC is considerably higher than for their counterparts in other countries.

Moreover, the FASB's study (2000) mention that some companies evaluate the reporting section of their websites by applying certain measures, including offering current press releases on the company's website. It was found that current press releases and news are one of the most frequently disclosed items; 75% of sampled companies provide this information. The current finding is consistent with previous studies; for example, Marston and Polei (2004) state that 74% in 2000 and 100% in 2003 of German companies disclose the most recent press releases or news. Xiao et al. (2004) find a similar result (60%), while Elsayed (2010) reports a lower percentage (31.7%).

Furthermore, in order to assist users of websites to easily find the most current information, 74% of SLC provide hints to find current information directly. Lybaert (2002) reports that 42% of Dutch companies offer hints for their website users to direct them to current disclosed information. In Egypt, only 14% of the companies provide such information (Elsayed, 2010) but this percentage has risen to 24% (Ahmed et al., 2017). In addition, many SLC (66%) allow investors and other users of their websites to register for future email or social media alerts to make sure that they are receiving the most up-to-date information without delay. This finding is comparable to studies on developed countries (61% in Ireland (Abdelsalam and El-Masry, 2008), 70.8% in the US (Kelton and Yang, 2008), 75% the UK (Abdelsalam et al., 2006) and 80% in Germany (Marston and Polei; 2004)). In contrast, studies of developing countries show lower percentages; for example, 13.9% and 12% of Egyptian companies provide this feature (Elsayed, 2010; Ahmed et al., 2017), while 3% of Chinese companies (Xiao et al., 2004) and 15% of Saudi companies do so (Al-Motrafi, 2008). These results clearly reveal that SLC are

145

responding satisfactorily to the needs of internet users regarding the disclosure of such up-to-date information.

The majority of SLC provide current financial highlights and summaries (68%) and current key financial ratios (62%), which indicates that SLC recognise the importance of providing timely information to investors and other users. Similarly, Dolinšek and Lutar-Skerbinjek (2018), state that 64% of sampled companies disclose financial summaries and 71% provide financial ratios. Elsayed (2010) mentions that 15.6% of Egyptian companies provide both of current financial highlights and current key financial ratios. Moreover, providing the most recent interim financial report is one of the most common frequently disclosed items by SLC. It was found that 55% of the sampled companies disclose the latest interim financial report on their websites. In developed countries, Kelton and Yang (2008) report that 60.9% of their sample disclosed the most recent interim report, Dolinšek and Lutar-Skerbinjek (2018) state that 29% of Slovenian companies disclose it and Abdelsalam and El-Masry (2008) find that 89% of Irish companies present such a report on their website. However, in developing countries, Elsayed (2010) and Ahmed et al. (2017) report similar percentages (19.4% and 19.8% respectively) for providing this report by Egyptian companies, while 33% of Arafa's sample (2012) do so. Al-Motrafi (2008) mentions that 13% of Saudi companies disseminate the latest interim report.

Both current dividends announcements and providing a link to the share price on Tadawul (or other SEs) are equally disclosed by SLC (42%). This finding is close to that of Despina and Demetrios (2009), who report that 53% of Greek companies disclose current dividends announcements. However, 25% of Turkish companies (Erer and Dalgic, 2011) and 5.6% of Egyptian companies (Elsayed, 2010) provide such information. Moreover, Arafa (2012) mentions that only 7.8% of the sampled companies in Egypt provide a link to the share price on the stock exchange.

The current study reveals some indication for disclosing other CIR timeliness items such as disclosing the latest share price (27%), disclosing the specific update time for the share price data (23%), providing a link to the online regulatory news service (20%) and offering a calendar of future financial events (19%).

At the other end of spectrum, the current study's findings reveal a few areas where timeliness is far from the required level. It was found that the most rarely disclosed items are providing webcasts, providing a link to a calendar on Tadawul (or other SEs) and informing user when to expect a response for email or online requests.

With regard to providing webcasts, none of the SLC provide webcasts on their websites. Allam and Lymer (2003) report that, on average, 60% of sampled companies provide webcasts (84% in the US, 68% in the UK, 84% in Canada, 62% in Australia and 4% in Hong Kong) and 42% of Irish listed companies offer webcasting (Abdelsalam and El-Masry, 2008). In the developing countries, studies report much lower results. For example, Elsayed (2010) finds only one company (0.6%) that provides webcasts, while 3% and 2% of Egyptian companies (Arafa, 2012; Ahmed et al., 2017) and 1% of Saudi companies (Al-Motrafi, 2008) offer webcasts on their websites.

Moreover, only 6% of SLC provide a link to a calendar on Tadawul (or other SE) and the same percentage of companies inform the users when to expect a response to their email or online request. Although these results are very low (6%), they are still comparable to other previous studies. Abdelsalam and El-Masry (2008) report that only 9% of their sample told the users when to expect a response to their email or online request and Abdelsalam et al. (2006) find that 3% of UK companies provide such information, while none of the sampled companies investigated by either Arafa (2012) or Al-Motrafi (2008) told the user when to expect a response to an email or online request and only 1.7% of the sample provide a link to a calendar on other stock exchanges (Arafa, 2012).

In the light of the above discussions, it can be concluded that SLC should concentrate more on providing a satisfactory timeliness level. Nevertheless, a comparison of the current results with the results of studies in developed countries shows that Saudi companies are close to their counterparts in many areas of CIR timeliness.

Although a considerable number of companies are not yet aware of the needs of investors and other users to acquire the most recent information about the company, SLC timeliness level has increased since the previous Saudi studies (see Al-Motrafi, 2008; Alshowaiman, 2008). Among the 18 items deemed to measure CIR timeliness, 8 items scored 55% or above and only one item, namely webcasting, was not disclosed at all by any company. In general, the variation between companies regarding timeliness leaves room for the implementation of more improvements to enhance the timeliness level, taking into account the fact that timeliness is considered one of the most important elements of the quality of disclosure (AIMR, 2000). These findings answer the third sub-question 1.3 about presenting the disclosed information on the SLC websites at a time when stakeholders need it.

Considering that one of the main features of any sound and well-founded website is how easy it is to search, navigate, obtain and locate information on the site (Abdelsalam et al., 2006), companies should provide means that ease the use of their websites. The next section discusses

the usability of SLC websites.

5.4.4 Usability

The forth section of the CIR disclosure index measures CIR usability, including 54 items. The percentages of companies that include each item of this index are presented in appendix 11. Most SLC (93%) disclose on average between 40% and 80% of the usability items and no company scored under 20% in total (see Table 5-6). These results reflect that, in general, SLC are acknowledging the importance of site usability and are designing their websites in a way that makes obtaining, understanding and using information easier for all website users. Interestingly, four items were utilised by all the SLC, namely using a common natural language of the company name in the URL address, the page being not wider than the screen (no horizontal scrolling required), the text stands still (no moving, blinking or zooming required) and there is a consistent use of arrows. In addition, another 4 items were utilised by 99% of SLC, which are user feedback or contact us, the name or logo of company is easy to spot on the website, the site uses standard font sizes as well as a high contrast between foreground and background colours.

One of the popular usability items is using a common natural language for the company name in the URL address. Using a simple website address makes access easier, and this occurs when the URL address is short enough for users to remember or is a logical extension of the company's name or brand (Al-Motrafi, 2008). All the SLC in this study use a common company name in their URL addresses. Abdelsalam et al. (2006) mention that 81% of the sampled companies use a common URL address and Al-Motrafi (2008) reports a similar percentage (80%) for Saudi public companies.

Moreover, all SLC have web pages not wider than the screen, a stand still text that does not move, blink or zoom and a consistent use of arrows, which reflects that SLC are clearly taking the importance of those features of usability into consideration. The results of previous studies are slightly lower than the current study; for example, Abdelsalam et al. (2006) find that 99% of the UK companies provide a page not wider than screen and 84% of Saudi public companies do so (Al-Motrafi, 2008). Consistent with this study, all Abdelsalam et al.'s sample (2006) use a static text, while only 84% of companies use a stand still text according to Al-Motrafi (2008). With regard to a consistent use of arrows, such as having some arrows control scrolling while others expand and collapse lists, Arafa (2012) reports that 77% of the sample has this feature, as do 83% (Al-Motrafi, 2008) and 98% (Abdelsalam et al., 2006).

One of the most common features of usability utilized by SLC is a 'contact us' facility or user

feedback. The importance of a feedback facility arises from the fact that it enables more communication and personal contact with website users, which could help in service/product improvement (Al-Motrafi, 2008). 99% of SLC provide this feature to the users of their website. This finding is in line with Abdelsalam et al. (2006), who state that 95% of UK companies provide a feedback facility online, and Arafa (2012), who reports that 97% of the sample offer this feature. Similarly, the survey conducted by Desoky (2009) finds that 89% of Egyptian companies offer this and Al-Motrafi (2008) finds that 82% of Saudi companies do so, while only 37% of companies in Elsayed's sample (2010) make the feedback channel available online.

Additionally, it can be seen that most SLC (99%) are keen to ease the use of website by using standard font sizes, utilising a high contrast between foreground and background colours to aid colour-blind users, and making the name or logo of the company easy to spot on the website. Similar results have been found in previous studies; for example, Abdelsalam et al. (2006) mention that 99% of the total sample include these tools on their website and Al-Motrafi (2008) reports that 83%, 82%, 84% of Saudi public companies use standard font sizes, utilise high contrast between foreground and background colours, and ease in spotting the company name or logo on the website, respectively.

In order to help users navigate the websites easily, the majority of SLC provide a table of contents (95%) and place the navigation area in a suitable position (on right/top side of screen for Arabic website 95%, and on left/top side of screen for English website 92%). These results are comparable to other studies in developed countries; for example, FASB (2000) reports that 88% of US sampled companies offer a table of contents. This percentage increases to 100% in Hindi and Rich's study (2010). Marston and Polei (2004) find that 77% of German companies provide table of contents. In developing countries, the percentage vary from 79% in Egypt (Elsayed, 2010) to 31% in China (Xiao et al., 2004) and only 17.5% in Saudi (Alshowaiman, 2008). Regarding navigation areas, Abdelsalam et al. (2006) mention that 94% of their sample position the navigation area on left/top side of screen for more comfort use and Al-Motrafi (2008) finds these percentages to be 64% and 77% for Arabic and English websites, respectively.

One of the most frequent usability items disclosed by SLC is providing one click/link to a press release from the home page. 157 companies (92%) offer this link via the internet to their stakeholders, which is comparable to the finding by Abdelsalam et al. (2006), who find that 98% of their sample do so. However, lower percentages were found in other studies; for example, Marston and Polei (2004) find that 89% of sampled companies provide one click/link

to press releases from the home page, while Xiao et al. (2004) report that 63% of Chinese companies offer this feature, Aly (2008) mentions that only 32% of sampled companies provide this tool, as do 36.5% in Arafa's study (2012), 41% reported by Ahmed et al. (2017) and 57% reported by Al-Motrafi (2008).

Examining appendix 11 again indicates that the other popular usability items are having a language menu or changing the language option on the home page (90%), one click to reach investor relations or financial information (89%), ability to download information (89%), avoiding making the user scroll to get important navigation or submit buttons (88%), visibility of directors' and executives' details (88%) having the website working effectively in all languages (82%) and information that enables Muslims to determine the amount of Zakat (79.4%). All these tools facilitate the acquiring of the required information and help stakeholders to use the company's website easily. Many previous studies check for the utilization of such tools (e.g. Al-Modahki, 1995; Al-Mulhem, 1997; FASB, 2000; Allam and Lymer, 2003; Lodhia et al., 2004; Marston and Polei, 2004; Al-Razeen and Karbhari, 2004; Xiao et al., 2004; Abdelsalam et al., 2006; Al-Motrafi, 2008; Aly, 2008; Desoky, 2009; Elsayed, 2010; Hindi and Rich, 2010; Othman and Thani, 2010; Aribi and Gao, 2011; Alkhtani, 2012; Arafa, 2012; Ahmed et al., 2017; Dolinšek and Lutar-Skerbinjek, 2018). In the light of these findings, it can be clearly seen that SLC have perceived the importance of utilising usability tools in their websites and are keen to provide more features to make their websites more user-friendly.

On the other hand, there are some items of usability that were rarely disclosed by SLC. The lowest provided item is a link to the main table of contents from each page of the annual report; the current study reveals that none of the sampled companies offer this link. This result is similar to that of Arafa (2012), who finds that only one Egyptian company (0.87%) provides a link from each page to the main table of contents, while Al-Motrafi (2008) reports a higher percentage (9%). A different result was reported by Abdelsalam et al. (2006), who find that 37% of UK sampled companies provide such a link in their annual reports.

Among the lowest offered usability items on the websites of the SLC are having the option to download a PDF document in smaller sections, displaying a presentation's length and current progress to complete a webcast, and providing a gateway page that gives a description of the content and size of a PDF file. Only one company (0.6%) offers the option to download a PDF document in smaller sections; this result represents a low percentage compared with previous studies (Al-Motrafi, 2008, 12%; Abdelsalam et al., 2006, 15%). With respect to providing a screen to display a presentation's length and current progress to complete a webcast, again only

two companies (1.2%) do so. This result is close to that of Al-Motrafi (2008), who mentions that none of the Saudi public companies provide this feature; whereas Abdelsalam et al. (2006) report a totally different result (41%) for UK sampled companies. Of the total sample, four companies (2.4%) provide a gateway page that describes the content and file size of a PDF document. Unlike the current study's finding, 8% of Al-Motrafi's sample (2008) and 28% of Abdelsalam et al.'s sample (2006) offer this information.

In addition, another failure to address the importance of usability tools is not displaying audio clips or recorded speeches from shareholder meetings on the website. Only 1.8% of SLC present such audio clips or recorded speeches to their websites' users. Heterogeneous results were found in previous studies, while the percentages for developed countries are considerably higher than those for the current study; for example, 36% in the UK (Abdelsalam et al., 2006) and 77% in Germany (Marston and Polei, 2004), while developing countries show significantly lower percentages, for example, only 3.5% of Egyptian companies (Arafa, 2012) and none of Saudi public companies (Al-Motrafi, 2008) offer this tool.

Furthermore, a few SLC (2.9%) change links colours to distinguish between visited and unvisited areas. This finding is comparable to that by Abdelsalam et al. (2006), who state that only 2% of the sample links change colours to show visited and unvisited links. Similarly, Arafa (2012) reports a similar percentage (3.48%), whereas Al-Motrafi's result (2008) is relatively higher (8%). In addition, only 2.9% of the sampled companies make analysts' details visible on their websites. Considerable variation was found in the prior studies regarding the visibility of analysts' details; while in developing countries the percentage ranged from 0% in Saudi Arabia (Al-Motrafi, 2008) to 8.7% in Egypt (Arafa, 2012). In developed countries, the percentage was 16.9% in Greece (Despina and Demetrios, 2009) 45% in the UK (Abdelsalam et al., 2006), 63% in the US (Kelton and Yang, 2008) and 100% in the US two years later (Hindi and Rich, 2010).

Providing a spell checker inserted into the search engine is very important for users who have spelling difficulties or are foreign language users. This study indicates that 7% of SLC provide a spell checker in the search engine. Although the percentage of offering a spell checker by the SLC is quite low, previous studies reveal lower percentages than the current study. Abdelsalam et al. (2006) find that only 5% of UK sampled companies include this tool on their websites, while 1% of Saudi public companies (Al-Motrafi, 2008) and none of the Egyptian companies offer this feature (Arafa, 2012).

One of the lowest common usability items provided by SLC is offering a help site for users in order to facilitate the usage of websites. Only 14 companies (8%) of SLC offer this tool on

their websites. A comparison of the finding of the current study with previous studies reveals that providing a help site is relatively low. For example, Marston and Polei (2004) find that 20% of their sample offer help sites on the website. Similarly, Xiao et al. (2004) report the same percentage (20%) for Chinese companies, while Despina and Demetrios (2009) report a lower percentage (2.7%) and so do Elsayed (2010), who finds that only 3.9% of Egyptian companies provide such a tool. Moreover, a close percentage (7.6%) was found regarding utilizing other disability aids, such as a zooming font. Arafa (2012) reveals a low percentage compared with the current study, that is, 4.35% of Egyptian companies provide this feature to their stakeholders.

Based on the above findings, it can be indicated that there is a considerable variation regarding the percentages of disclosing usability items between the SLC. However, the current study results show that SLC performance has improved over time and that, in general, it is comparable to their counterparts in developed countries for most usability items. Not only that the majority of the SLC (72%) score above 50% in total usability items, and no company disclosed less than 24% in total, but also some usability tools items are utilized by all SLC via their websites. These findings reflect the growing interest of SLC in satisfying the needs of their stakeholders to use the website easily and to introduce more dynamic and interactive websites for them. Illustrating the CIR usability features which are provided on SLC websites clearly answer the fourth sub-question 1-4 concerning how easy it is to obtain the required information from the company's website.

The recent increase in both number of companies and types of information disseminated via the internet necessitates an improvement in the quality of internet reporting information provided to users. Xiao et al. (2000) state that auditing features have been considered an important means of quality assurance. Hence, including audit items in the internet disclosure improves the website credibility and provides more certainty to the disclosed information as well as protects the interests of website users. The next section discusses the extent of CIR audit disclosed by SLC.

5.4.5 Audit

Twenty-eight items were included in the checklist to measure the CIR audit of SLC. These audit items were included in the disclosure index since the reliability and credibility of information disclosed on the internet represent a substantial concern to online users (Xiao et al., 2002). The results of these items' disclosure are presented in appendix 12.

The most frequently reported item on SLC websites is the name of the external auditors, being

disclosed by 81% of the sampled companies. Previous studies are clearly low compared with the current study result; for example, Aly (2008) finds that 30.6% of the sampled companies publish the auditor's name on their website, and 28.4% of Alshowaiman's sample (2008) do so. Although Al-Mulhem (1997) reports that 98% of Saudi companies disclose the external auditor's name, the reasons for this high percentage might be that the sample consists of only 40 companies and it is conducted for paper-based disclosure.

Highlighting which GAAP (Generally Accepted Accounting Standards) and which GAAS (Generally Accepted Auditing Standards) are used in the audit report are the most often disclosed audit items. 132 SLC (77.6%) point out which GAAP is used via their websites. Similarly, 131 companies (77%) highlight the GAAS that the auditor uses in the report. In developed countries, Abdelsalam et al. (2006) find that 100% of UK sampled companies disclose the GAAP basis in the audit report, whereas none of the sampled companies in Fisher et al.'s study (2004) point out this feature. In developing countries, lower percentages were reported by Aly (2008) 37%, Al-Motrafi (2008) 35%, and Arafa (2012), who mentions that 36% of Egyptian companies reveal the GAAP basis and 35% report the GAAS basis in the audit report, while Xiao et al. (2004) report that 69% of Chinese companies do so. These findings clarify that the quality of Saudi websites has improved over time regarding these features.

Moreover, the majority of SLC (77%) make the audit report's background or use borders consistent with those used in the audited financial statements. Considerable variation was found in the previous studies in developed countries; while Abdelsalam et al. (2006) and Fisher et al. (2004) report high percentages (98% and 91%, respectively), Marston and Polei (2004) find that only 5% of German companies use consistent borders. Yet, in developing countries, relatively low percentages (35%, 34%) of companies using this feature were found in Egypt (Arafa, 2012) and in Saudi Arabia (Al-Motrafi, 2008), respectively.

It can be indicated that both displaying audited financial statements accompanied by an audit report and the date of the auditor report are equally disclosed by SLC (76%). Abdelsalam et al. (2006) find that 100% of UK sampled companies provide an audit report along with audited financial statements. Al-Motrafi (2008) and Arafa (2012) report the same percentage, 35%, regarding posting audited financial statements and audit report together. However, only 25.7% of SLC in Alshowaiman's study (2008) display both audited financial statements along with the audit report and the date of auditor report. The results of the current study show the remarkable improvement of Saudi companies' websites compared with prior studies in the Saudi context.

One of the most frequently disclosed audit items is providing charters of the audit committee. 75% of SLC display audit committee charters on their websites. Similarly, Kelton and Yang (2008) mention that 76% of their sample publishes the charter of the audit committee via the internet. Abdelsalam et al. (2006) find that a slightly lower percentage of their surveyed companies disclose this information (54%); this percentage is close to that of Al-Motrafi (2008), who states that 51% of Saudi public companies provide the charter of the audit committee. Other studies reveal even lower percentages than the current study; for example, only 7.8% of the sample of Arafa (2012) and 6.7% of Elsayed's study (2010) report charters of the audit committee in the website.

Furthermore, the majority of SLC (75%) have the auditor's report available online all the time. Of the total sample, 74% provide a complete audit report. Several studies examine the presence of the auditor's report on the website. Fisher et al. (2004), for example, reveal that 98% of the sampled companies provide the auditor report online and an almost similar result (93%) was reported by Hindi and Rich (2010). However, lower percentages were found in many previous studies regarding the availability and completion of the audit report (FASB, 2000, 65%; Xiao et al., 2004, 40.9%; Alshowaiman, 2008, 25.7%; Aly, 2008, 25.8%; Elsayed, 2010, 17.8%; Erer and Dalgic, 2011, 83.8%). A comparison of these findings with the current study's findings makes it clear that SLC performance has increasingly improved in this respect.

The audit firm logo is an important means for website's users that aid them to distinguish between the audit report and other parts of the financial statements. This feature is offered by 75% of SLC. Fisher et al. (2004) report a relatively similar result (62%), while previous studies indicate lower results of placing the audit firm logo in the audit report. For example, Abdelsalam et al. (2006) find that only 6% of their sample include the audit firm logo in the audit report, while 25.2% in Arafa's study (2012), 29% of Al-Motrafi's sample (2008) and none of Alshowaiman's sampled companies (2008) provide this logo. It also seems clear that the percentage of Saudi companies that include the audit firm logo in the audit report is growing incrementally.

Amongst the highest disclosed items on the websites of the SLC are distinguishing audited financial statements from non-audited statements (74%), names and/or qualifications of the audit committee members (72%), avoiding hyperlink(s) from/to the audited financial statements to external unaudited websites or sections of the company website (71%), auditor report for the current year (69%), auditor report for the past year (69%), auditor scanned signature/seal of current year report (67%), auditor scanned signature/seal of last year's report (67%), and the interim reports accompanied by auditor limited report (61%). Many prior

studies include these items in their disclosure checklist (e.g. FASB, 2000; Fisher et al., 2004; Xiao et al., 2004; Abdelsalam et al., 2006; Al-Motrafi, 2008; Alshowaiman, 2008; Aly, 2008; Desoky, 2009; Hindi and Rich, 2010; Erer and Dalgic, 2011; Arafa, 2012; Ahmed et al., 2017; Dolinšek and Lutar-Skerbinjek, 2018).

On the other hand, none of the SLC disclose the following items: external auditor details, links from the auditor's report to the company's home, links from the auditor's report to the company's financial statements, links from the auditor's report to the company's other web pages, indication if the company's website is audited by one of the Big4 audit firms, and HTML audited financial statements pages being clearly labelled as "Audited".

Regarding external auditor details, it seems that SLC settle for providing the name of the external auditor, as mentioned above, without publishing any further details. Similarly, Alshowaiman (2008) reports that none of the sampled companies provide details on the website about the external auditor. Likewise, as indicated in previous studies, links from the auditor's report to other parts in the website are rarely offered. For instance, Fisher et al. (2004) find that 90% of listed companies' websites in New Zealand do not provide links from or to the auditor's report, Abdelsalam et al. (2006) state that only 2% of UK sampled companies offer this feature, and Al-Motrafi (2008) reports that 1% of Saudi public companies do so. However, none of the sample companies offer such links according to Alshowaiman (2008) and Arafa (2012). With respect to an indication on the company's website whether it is audited by one of the Big4 audit firms, Alshowaiman's study (2008) shows better performance than the current study, whereby 47% of the sample disclose this information. Similar to the current study, Arafa (2012) reports that none of the listed Egyptian companies clearly labelled each page of the audited financial statements (in HTML) as "Audited".

Both warning users when leaving audited pages and displaying a note on language translation and audit are equally disclosed by SLC (1%). Previous studies reveal comparable results to the current study with respect to the display of warning messages to users when leaving audited pages; for example, none of the sampled companies in the studies by Fisher et al. (2004), Abdelsalam et al. (2006), Alshowaiman (2008) and Arafa (2012) display this feature and only 1% in Al-Motrafi's study (2008) do so. Furthermore, Xiao et al. (2004) report that only 0.5% of the sample offer a note on language translation and auditing, which is close to this study's result, whereas Aly (2008) finds a slightly higher percentage (6.5%).

Only 4 companies provide a direct link to the auditor's report from the company's home page or other webpages (2%). Fisher et al. (2004) find that 11 companies (9%) offer the link, while none of the sampled companies in Alshowaiman's study (2008) provide a direct link from any

webpage of the company to the auditor's report. In addition, links to the external auditor's website was provided by 8% of SLC whereas previous studies show a total absence of this feature in all of the sampled websites (e.g. Abdelsalam et al., 2006; Al-Motrafi, 2008; Alshowaiman, 2008; Arafa, 2012).

Based on the above findings, it can be concluded that there is a remarkable variation in disclosing audit items among SLC. However, 18 out of the 28 audit items were disclosed by more than 60% of the companies, which reveals that SLC performance in this respect is quite satisfactory and, in general, close to their counterparts in other countries. At the other end of the spectrum, the other remaining 10 audit items score less than10%, though are still comparable to previous studies, as these in general show similar score levels. Surprisingly, all the companies' scores for audit items are either higher than 60% or lower than 10%, leaving a huge gap in-between. More investigation in this area is required to find the reason for such results. Determining the extent of CIR audit clearly answers the fifth sub-question 1-5.

5.5 Summary

This chapter presents a summary of the descriptive statistics of the CIR index and its component sub-indices. By doing so, the first objective of this study, which is to understand the actual CIR practices in Saudi listed companies, will be achieved. The first section of this chapter deals with the reliability and validity tests, which are carried out to confirm the goodness of the CIR index and its component sub-indices. The findings ensure that the research instrument is reliable and valid for the measurement of and its components. The second section examines the extent of CIR total in Saudi listed companies and reveals that all the sampled companies have a website. It shows an increased interest in using CIR over the last decade which is reflected in the moderate extent of CIR total in SLC compared with other countries. Section three attempts to add a more in-depth understanding of CIR practice by exploring the extent of each CIR component. The results show that, on average, the mean disclosure level of CIR components is moderate and close to each other, whereby content has the highest level (55%) and timeliness has the lowest (43%). However, a considerable variation was found in the extent of each CIR element among companies, which requires examining each element separately. Despite the variation among SLC, the findings reveal that the extent of CIR components, in general, has improved over time and is comparable to the counterparts in developed countries. This chapter provides an answer to the first research question and its sub

questions by assessing the actual practice of CIR total and its five components. The next chapter discusses the empirical findings of the multivariate regression analysis.

CHAPTER 6
EMPIRICAL FINDINGS: CORPORATE INTERNET REPORTING: TOTAL

6.1 Introduction

Chapter five presents the descriptive statistical analysis of corporate internet reporting and its components. This chapter demonstrates the statistical tests used to investigate the relationship between CIR total and the explanatory variables. The chapter particularly aims to answer the second question of this study: what are the significant factors that motivate CIR decision-making by Saudi listed companies, that is, to assess the extent of the relationship, if any, between CIR total and the explanatory variables. Multi-analyses are performed to achieve this purpose.

This chapter is organised as follows: section 6.2 represents the univariate descriptive statistics of the continuous and dummy independent variables, as univariate analysis is concerned with describing each variable individually. This is followed by section 6.3, which explores the relationship between CIR total and each explanatory variable using the bivariate analysis that examines the association between two variables separately. To explain this relationship, both parametric and non-parametric tests are used. Section 6.4 deals with multivariate analysis, which examines the relationship between CIR total and the entire explanatory variables at the same time. This analysis is conducted to explore the relationship between one variable and two or more variables simultaneously. Three regression models are applied: un-transformation model, log transformation model and the bootstrap model as robustness for the obtained results. Section 6.5 reports the results of all multivariate regression analyses models. A detailed discussion is provided in section 6.6, and finally section 6.7 presents a summary of the chapter.

6.2 Univariate descriptive statistics

As mentioned in chapter 4, the independent variables are of two types: continuous variables and dummy variables. The following table summarises the descriptive statistics of the continuous variables.

Table 6-1: Descriptive Statistics of the Continuous Variables

Variables	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Kurtosis Statistic
Firm size	4.894	8.577	6.37428	.809613	.873	.316
Firm growth	-.718	5.570	.22442	.811386	5.293	30.000
Leverage	.005	1.527	.47429	.273037	.296	-.109
Liquidity	.15	105.56	3.1966	10.07379	8.935	82.979
Board size	4	12	8.43	1.503	-.286	-.155
Board independence	25 %	100 %	49.6571%	16.93494%	.957	.182
Board frequency of meeting	1	16	5.40	2.184	1.628	4.844
Block holder ownership	0 %	98.75%	37.463%	26.09472%	.241	-.848
Director ownership	0 %	95.442%	12.7166%	18.098944%	1.895	3.567
Institutional ownership	0 %	100 %	23.2801%	25.28789%	.715	-.757
Government ownership	0 %	81.24%	7.4769%	16.8687%	2.771	7.315
Audit committee size	3	5	3.36	.641	1.544	1.116
Audit committee frequency of meeting	1	15	5.63	2.266	1.338	3.154
Audit committee independence	25 %	100%	77.2157%	21.51004%	-.386	-.814

As shown above in Table 6-1, the firm size mean is 6.37428 with a small variation range (4.894-8.577). Moreover, firm growth is 22.4 %, which represents a rational percentage in general. Additionally, Saudi listed companies show a fairly ideal leverage ratio (0.47) with a maximum of 1.527. The liquidity level appears to be acceptable (3.196), indicating healthy liquidity among Saudi listed companies. Furthermore, the mean board size is 8 members, with a minimum of 4 members and a maximum of 12 members, taking into consideration that article 12 of the Saudi Corporate Governance code, which states that the number on the board of directors should be not less than 3 and not more than 11, is not yet mandatory. Regarding board independence, Saudi listed companies range from a completely independent board (100%) to 25% independent members. The average frequency of board meeting is 5.4, whereby the overall frequency of meeting falls between 1 and 16. In addition, the ownership structure of Saudi listed companies is concentrated to some extent (approximately 37.5 %), whereby institutional ownership represents the highest structure (23.28 %) and government ownership is the lowest (7.48%). The compulsory article number 14 of the Saudi Corporate Governance code states that the members of the audit committee should be not less than 3 members, thus the minimum size of the audit committee is 3, while the maximum is 5 members. The audit

committee frequency of meeting is 5.6[8], which is close to the frequency of board meetings (5.4). Finally, similar to board independence, the independence of the audit committee ranges from 100% to 25% with an average of nearly 77%. Moreover, it can be seen in Table 6-1 that some of the continuous variables are highly skewed, which indicates that these variables are not normally distributed. The following table summarises the descriptive statistics of the dummy variables.

Table 6-2: Descriptive Statistics of the Dummy Variables

Variables		Frequency	Percent
Dividends	0	85	50.0
	1pay	85	50.0
Industry type	0	107	62.9
	1 financial	63	37.1
Audit type	0	36	21.2
	1 big-4	134	78.8
Role duality	0	160	94.1
	1 CEO is chairman	10	5.9

Regarding paying dividends, the result in the above table (6-2) reveals that half of the Saudi listed companies pay dividends during the financial year to their shareholders. Table 6-2 also indicates that more than two-thirds of Saudi listed companies are non-financial companies. Furthermore, high proportions of Saudi listed companies (78.8%) had a Big4 auditor. With respect to role duality, most of the Saudi listed companies (94%) separate the role of CEO from that of chairman, leaving a small proportion of companies (5.9%) where the CEO is the chairmen as well.

The next section examines the extent of the relationship between CIR total and each independent variable individually.

6.3 Bivariate analysis

To assess the relationship between the dependent variable CIR total and each independent variable, parametric and non-parametric tests are conducted. Pearson's correlation coefficient is used as a parametric test while Spearman's correlation coefficient is used as a non-parametric test for continuous independent variables, whereas the T-test as a parametric test and Mann-Whitney as a non-parametric test are used for the dummy independent variables. table 6-3 shows the test results regarding these individual relationships between the dependent variable

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[8] The new amendment of the SCGC in 2/2017 stipulates that the audit committee should hold at least four meetings during the financial year.

CIR total and the continuous independent variables, while table 6-4 shows this for the dummy independent variables.

Table 6-3: Bivariate analysis between corporate internet reporting and continuous variables

Variables	Pearson Correlation	Spearman's rho
Firm size	.583***	.667***
Firm growth	-.051	-.002
Leverage	.168**	.192**
Liquidity	-.236***	-.050
Board size	.386***	.331***
Board independence	-.193**	-.225***
Board frequency of meeting	-.060	-.082
Block holder ownership	.167**	.198***
Director ownership	.011	-.033
Institutional ownership	.019	.008
Government ownership	.204***	.416***
Audit com. size	.284***	.334***
Audit frequency of meeting	-.055	-.039
Audit committee independence	-.321***	-.318***

***. Correlation is significant at the 0.01 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed).

It can be seen from tables 6-3 and 6-4 that the parametric test shows that most of the firm characteristics variables are significantly correlated at the 1% level. While firm size is the only variable that has a fairly high significantly positive correlation, the other firm characteristics (leverage, liquidity, dividends and audit type) have a medium to small significant correlation at the 1% and 5% levels. According to Cohen (1988) and Field (2013), Pearson correlation coefficient values of $\pm$ .1 represent a small effect, $\pm$ .3 is a medium effect and $\pm$ .5 is a large effect.

As most of previous studies have shown (e.g. Alshowaiman, 2008; Allam, 2006; Xiao et al., 2004; Oyelere et al., 2003; Marston, 2003; Debreceny et al., 2002; Ettredge et al., 2001), large companies tend to disclose more information in total; likewise, companies with less liquidity and those that pay dividends are more likely to increase their level of CIR total. Furthermore, companies audited by the Big4 are correlated significantly at 1% level, which implies a greater level of disclosure for those companies than companies audited by local firms. The non-parametric coefficient test shows similar results regarding firm characteristics variables in terms of the significant of correlation, with the exception of liquidity, which is not significant for the Spearman coefficient.

With respect to corporate governance variables, only two of the board of directors' variables have a significant correlation with CIR total. Companies with a large board of directors are correlated positively and significantly with CIR total at the 1% level, and highly independent board companies have a significant and negative correlation at the 5% level. Although the non-

parametric coefficients are slightly different from the parametric coefficients, the significance and direction of the correlation are still the same for all board of directors' variables. Block holder ownership is positively correlated with CIR total at the 5% significant level, however, the Spearman coefficient shows a barely higher level of correlation at the 1% level of significance. Among the other types of ownership structures, that is, director and institutional ownership, only government ownership is correlated positively and significantly at the 1% level for both the Pearson and Spearman coefficients. This indicates that companies with higher government ownership tend to use the internet more to disseminate information on their websites.

Regarding audit committee variables, both audit committee size and independence are significantly correlated with CIR total at the 1% level. It can be stated that large audit committee companies are more interested in disclosing further information on their websites, while companies with less audit committee independency disclose more information via the internet. Spearman coefficients reveal the same results for audit committee size and independence at the same level of significance, yet with different values. It is interesting to find that the results of correlation coefficients of both the Pearson and Spearman tests are nearly the same for most variables, thus giving more confidence and strength to the obtained results. Although applying univariate and bivariate analyses to describe each independent variable and assess the relationship between CIR and each of its explanatory variables is a very informative analysis, using multivariate analysis is also important to examine these relationships simultaneously. Multivariate analysis considers the relationship between all of the explanatory variables and CIR total at the same time. Thus, multivariate analysis is discussed in the following section.

Table   6-4: T- and Mann Whitney tests for dummy variables

Variables	Mann Whitney test		T-Test	
	Mean Rank	Z value	Mean	T. value
Role Duality		.689		.559
0	84.85		.51406	
1	95.90		.54200	
Audit type		3.771***		3.276***
0	58.06		.43556	
1	92.87		.53724	
Dividends		4.324***		4.017***
0	69.19		.46871	
1	101.81		.56271	
Industry type		.044		.190
0	85.37		.51393	
1	85.71		.51873	

6.4 Multivariate analysis

Multivariate analysis consists of a number of techniques that can be used to explain the relation between several variables at the same time. This analysis allows the inclusion of multiple variables and examines the contribution of each variable, taking into account the interrelationship between the independent variables (Rencher, 2002).

Multiple regression analysis is a multivariate analysis technique that is commonly used in statistics studies in general and accounting disclosure studies in particular (Cooke, 1998). Using this analysis is useful to assess the linear combination between several independent variables (either continuous or dummy) that significantly explain the changes in the dependent variables (Field, 2013). Hence, as mentioned in chapter 4, the multiple regression analysis is conducted in this study using the Ordinary Least Squares method (OLS) to determine the association between the level of CIR total and the explanatory variables. To apply the OLS method, many assumptions have to be considered. The next section demonstrates these assumptions in detail.

6.4.1 OLS assumptions

For the OLS regression model to generalize, several fundamental assumptions must be satisfied. OLS assumptions include linearity, multicollinearity, normality and homoscedasticity. Considering such assumptions helps in developing the best predictable models that examine relationships between independent variables and dependent variables. However, failure to comply with these assumptions may result in misleading or inaccurate consequences.

6.4.1.1 Linearity

To check the linearity of the variables, Osborne and Waters (2002) suggest that the preferable method of assessing non-linearity is by examining residual plots. Detecting a funnel pattern means that linearity is violated. However, figure 6-1 indicates that linearity is not violated in this model. Furthermore, non-linearity can be detected by plotting each independent variable against the dependent variable and drawing the regression line that illustrates the relationship between the two variables. The patterns of independent variables in the plots show that the assumption of linearity has been met (see appendix 13).

Figure 6.1:   Scatterplots of residuals
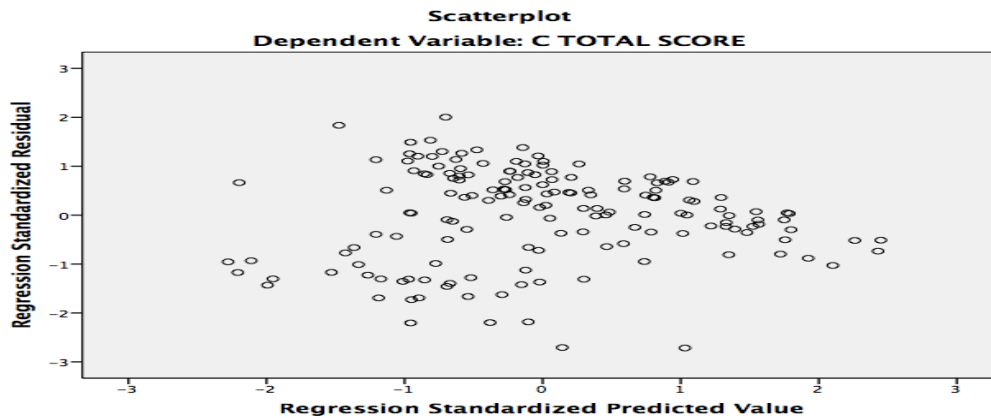
Residuals Statistics^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.28894	.77377	.52259	.102557	162
Std. Predicted Value	-2.278	2.449	.000	1.000	162
Standard Error of Predicted Value	.025	.075	.041	.011	162
Adjusted Predicted Value	.28849	.78429	.52356	.106656	162
Residual	-.338299	.249461	.000000	.117382	162
Std. Residual	-2.716	2.003	.000	.942	162
Stud. Residual	-3.222	2.130	-.004	1.013	162
Deleted Residual	-.475983	.282094	-.000970	.136514	162
Stud. Deleted Residual	-3.334	2.157	-.006	1.021	162
Mahal. Distance	5.564	56.704	17.889	10.639	162
Cook's Distance	.000	.222	.009	.024	162
Centered Leverage Value	.035	.352	.111	.066	162
a. Dependent Variable: C total					

6.4.1.2 Multicollinearity

Multicollinearity occurs when there is a strong correlation between two or more independent variables in the regression model. The presence of a perfect or strong linear relationship among the variables may pose a problem regarding the accuracy of the regression model. To determine if multicollinearity exists, two ways are commonly used: the correlation matrix and variance inflation factors (VIF). The correlation matrix is used to check all the independent variables' correlation. A high correlation coefficient between any two variables indicates the existence of multicollinearity. Hutcheson and Sofroniou (1999) and Field (2013) state that multicollinearity could be a major concern if it exceeds 0.80, while Fotheringham (1982) and Cortina (1993) suggest that correlation coefficients exceeding 0.70 are worthy of concern. The Pearson correlation coefficients (parametric) and Spearman correlation coefficients (non-parametric) between the independent variables are presented in Table 6-5 and Table 6-6. Both the Pearson and Spearman correlation coefficients seem to be relatively similar. According to tables 6-5 and 6-6, it can be concluded that there is no serious threat of multicollinearity between the

164

independent variables in the current study as the correlations among the variables are fairly low, and the largest correlation coefficient is 0.66.

Table   6-5: Pearson Correlation Coefficients of Explanatory Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1																	
2	-.060	1																
3	.288**	.015	1															
4	-.148	-.023	-.274**	1														
5	.334**	-.217**	-.313**	-.088	1													
6	.044	.209**	.381**	-.008	-.402**	1												
7	.285**	.120	.313**	-.119	-.029	.219**	1											
8	.403**	.050	.180*	-.250**	.137	.195*	.273**	1										
9	-.214**	-.050	-.153*	.082	-.014	.009	-.309**	-.130	1									
10	.121	-.019	-.039	-.052	.151	.001	-.052	-.055	.048	1								
11	.017	.099	-.143	-.007	.050	-.140	-.054	.062	.046	.209**	1							
12	.300**	.036	.235**	-.006	.018	.142	.394**	.214**	-.508**	.012	-.023	1						
13	-.027	-.007	-.135	-.015	.125	-.124	.091	.092	-.108	-.130	.033	.242**	1					
14	-.045	.121	.219**	.055	-.203**	.252**	.307**	.153*	-.420**	-.154*	-.052	.668**	-.027	1				
15	.554**	-.024	.049	-.062	.200**	.020	.167*	.172*	-.028	.328**	.036	.269**	-.009	-.292**	1			
16	.499**	-.065	.125	-.068	.129	.115	.206**	.346**	-.078	.154*	.092	.245**	-.172*	.064	.419**	1		
17	.066	.179*	.107	-.049	-.005	.104	.051	.025	.000	.458**	.130	.095	.031	-.015	.273**	.076	1	
18	-.245**	.099	-.089	.116	-.176*	.137	-.093	-.192*	.354**	-.111	.064	-.117	-.021	-.029	-.075	-.123	-.052	1

Table   6-6: Spearman Correlation Coefficients of Explanatory Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1.000																	
2	-.122	1.00																
3	.199**	.230**	1.00															
4	-.114	-.131	-.619**	1.00														
5	.392**	-.250**	-.314**	.201**	1.00													
6	-.075	.283**	.399**	-.220**	-.402**	1.00												
7	.249**	.205**	.347**	-.098	-.029	.219**	1.00											
8	.380**	.121	.202**	-.088	.119	.224**	.253**	1.00										
9	-.211**	-.040	-.172*	.012	-.027	.014	-.316**	-.140	1.00									
10	.069	-.134	-.081	.069	.100	.045	-.065	-.056	.100	1.00								
11	.038	.032	-.145	.057	.050	-.140	-.054	.035	.068	.163*	1.00							
12	.253**	.174*	.248**	-.044	.031	.148	.397**	.210**	-.524**	-.049	-.019	1.00						
13	.030	-.003	-.126	-.013	.194*	-.158*	.094	.107	.016	-.147	.046	.043	1.00					
14	-.049	.331**	.279**	-.029	-.196*	.300**	.333**	.203**	-.377**	-.195*	-.034	.628**	-.062	1.00				
15	.594**	-.143	-.001	-.025	.325**	-.005	.157*	.335**	.016	.211**	.049	.131	-.046	-.313**	1.00			
16	.396**	-.110	.073	-.023	.141	.089	.201**	.342**	-.115	.203**	.114	.222**	-.189*	.072	.361**	1.00		
17	.012	-.035	.064	-.132	-.023	.099	.018	.057	.028	.358**	.153*	.026	-.076	-.054	.118	.115	1.00	
18	-.298**	.150	-.090	.029	-.183*	.131	-.113	-.191*	.361**	-.080	.061	-.138	.055	-.030	-.186*	-.131	-.024	1.00

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note: (1) firm size (2) firm growth (3) leverage (4) liquidity (5) dividends (6) industry type (7) audit type (8) board size (9) board independence (10) board frequency of meeting (11) role duality (12) block holder ownership (13) director ownership (14) institutional ownership (15) government ownership (16) audit com. size (17) audit frequency of meeting (18) audit committee independence

Furthermore, two additional tests are calculated to investigate multicollinearity presence: Variance Inflation Factor (VIF) and tolerance statistics. VIF and its reciprocal tolerance (1/VIF) are indicators of the strength of a linear relationship between any two independent variables (Field, 2013). Though there is no agreed threshold for the value of VIF or tolerance to be considered problematic, Hutcheson and Sofroniou (1999) suggests that any independent variables that have a VIF value of 5 or higher, or a tolerance of 0.2 or lower, are a potential problem of multicollinearity. However, Field (2013) and Saunders et al. (2012) report that a

value of VIF more than 10 or 5 and a value of tolerance less than 0.1 or 0.2 represent a major multicollinearity problem. Table 6-7 presents the VIF and tolerance calculations for all the independent variables. As it can be seen from the table, all the VIF values are less than 5 (the maximum value is 4.49) and the tolerance values are higher than 0.2 (the minimum value is 0.223) for all the explanatory variables, which means that in this case multicollinearity is not a serious problem. Based on the preceding results, it can be concluded that multicollinearity does not pose a threat among the variables in interpreting the results of the OLS regressions in the current study.

Table   6-7: VIF and tolerance multicollinearity tests

Variables	Collinearity Statistics	
	VIF	Tolerance
Firm size	2.492	.401
Firm growth	1.193	.838
Leverage	2.340	.427
Liquidity	1.408	.710
Dividends	1.815	.551
Industry type	1.666	.600
Audit type	1.385	.722
Board size	1.480	.676
Board independence	1.630	.613
Board frequency of meeting	1.498	.668
Role duality	1.162	.860
Block holder ownership	4.490	.223
Director ownership	1.566	.639
Institutional ownership	3.963	.252
Government ownership	3.125	.320
Audit committee size	1.632	.613
Audit committee frequency of meeting	1.432	.699
Audit committee independence	1.305	.766

Note: VIF - Variance Inflation Factor

6.4.1.3 Normality

OLS regression assumes that the variables are normally distributed. Non-normal distribution variables may result in an inefficient regression model and misleading conclusions. Normality assumption can be determined using skewness and kurtosis tests, P-P and Q-Q plots and histograms. However, Gujarati (2009) claims that it is expected for some of the data to have a level of non-normality since it is hard to have perfectly normally distributed data. Normality plots such as P-P plots, Q-Q plots and histograms, skewness and kurtosis tests are performed in the current study to check the normality assumption. With regard to normality plots, the data is said to be normal if the points in the normal probability plot lie more or less in a straight line and the histogram is shaped like a normal distribution. In figure 6-2, the histogram for the residual of dependent variable shows a slightly negative skewness of the dependent variable, which corresponds to where the P-P plot indicated that some points seem to be deviated from the straight line. However, the P-P and Q-Q plots, along with the histograms of the independent

166

variables, illustrate that some variables such as board size and board frequency of meeting were fairly normally distributed, others like audit frequency of meeting were slightly normally distributed, while some variables suffered from non-normal distribution, such as ownership variables (see appendix 13). Regarding skewness and kurtosis tests, no agreement was reached on the acceptable limits of skewness and kurtosis values. For example, Haniffa and Hudaib (2006) state that normality is met if the skewness value is within ± 1.96 and the kurtosis value of ± 3.0. Kline (2014) suggests that the criteria in social science is less strict, hence, data with a skewness value of ±3.0 and kurtosis value within ± 8.0 are considered acceptable. Furthermore, Field (2013) proposes that data with a skewness or kurtosis above an absolute value of 2.0 are considered problematic. Following Field (2013), it can be seen in table (6-8) that all the variables are normally distributed where the skewness value fall between 0.241 and 1.895, except government ownership, firm growth and liquidity as their skewness values were 2.77 and above. In addition, the kurtosis values for most of the variables range from 0.109 to 1.12, whereas some variables have values from 3.154 and above, such as firm growth and liquidity, indicating that these variables are not normally distributed.

Based on the preceding results, it can be said that the normality assumption has been violated for some variables; therefore, these variables were transformed, as suggested by the literature, to avoid the violation of normality assumption and alleviate the problem of non-normality (Osborne and Waters, 2002). Section 6.4.2 discusses the data transformation.

Figure 6.2: Histogram and normal P-P plot for CIR total
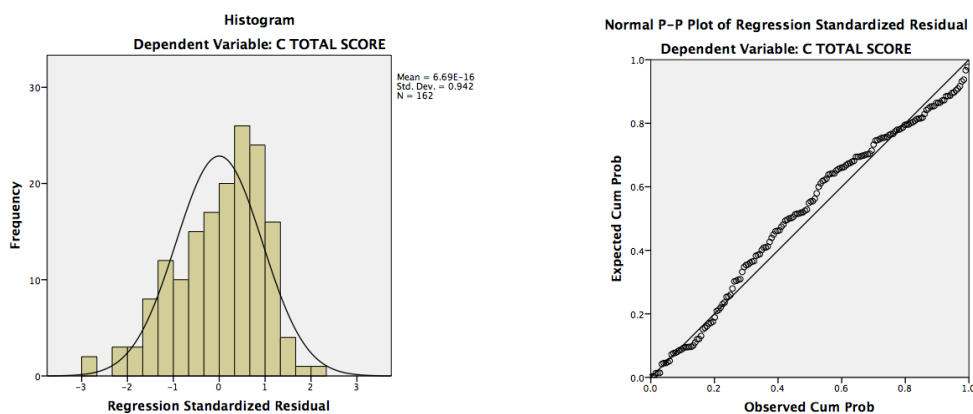
Table   6-8: Skewness and kurtosis values

Variables	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Board size	-.286	.186	-.155	.370
Board independence	.957	.186	.182	.370
Board frequency of meeting	1.628	.188	4.844	.374
Block holder ownership	.241	.186	-.848	.370
Director ownership	1.895	.186	3.567	.370
Institutional ownership	.715	.186	-.757	.370
Government ownership	2.771	.186	7.315	.370
Audit com. size	1.544	.186	1.116	.370
Audit frequency of meeting	1.338	.188	3.154	.374
Audit com. independence	-.386	.186	-.814	.370
Firm size	.873	.186	.316	.370
Firm growth	5.207	.189	29.518	.376
Leverage	296	.186	-.109	.370
Liquidity	8.935	.186	82.979	.370
C total	-.927	.186	-.336	.370

6.4.1.4 Homoscedasticity

Homoscedasticity means that the variance of the residual terms of the dependent and independent variables is constant (Field, 2013). Therefore, if the variances differ, the model is suffering from heteroscedasticity. Homoscedasticity can be assessed by the scatter-plot of the standardised residuals against standardised predicted variables of the dependent variable (ibid). The homoscedasticity assumption is met if the residuals are quite tightly scattered around a horizontal line. Figure 6-1 indicates that the current data seem to be homoscedastic and, consequently, the homoscedasticity assumption is not violated.

After checking the OLS model's assumptions, another important issue should be considered before running the model: the outliers. These outliers can bias the regression model as they affect the coefficient values of the estimated regression (ibid). The next section will discuss outliers and how to reduce the bias if detected.

6.4.2 Outliers

"Outlier is an observation which appears to be inconsistent with the remainder of that set of data" (Barnett and Lewis, 1994). Such extreme values which substantially deviate from most of the other data can bias the results of regression analysis and may possibly violate the Ordinary Least Squares (OLS) assumptions, particularly if the sample size is small (Gujarati and Porter, 2009). Outliers can be detected by a visual examination of graphs, such as boxplots, histograms or scatter-plots, and by finding the extreme value that differs from the general trend of the data. Alternatively, outliers can be identified using statistical methods such as z-scores, Mahalanobis distances, Cook's distance and Leverage statistics. Regarding z-scores, Field (2013) indicates that z-scores (standardized residuals) should be within the limit of ±3.29

otherwise there may be too many outliers in the data that might bias the regression results. In addition, 95% of the sample cases have to be within about ± 2 and 99% between -2.58 and +2.58 for the model to be acceptable. The current study results reveal that 96.5% of the cases have values within the limits of ± 2 and only 2 cases (1%) have absolute values more than 2.5, which may be a cause for concern. However, all the sample's z-scores are less than the absolute value of 3.29 (see table 6-9). Consequently, it can be stated that the current model appears to be fairly accurate and that the extreme values do not distort the regression accuracy. Mahalanobis is another method of detecting outliers which measures the distance of cases from the means of predictor variables (Field, 2013). The highest values cases should be examined as they might indicate the presence of outliers. To find the cut-off point to identify outliers, Field (2013) suggests the use of the critical value of chi-square with degrees of freedom equal to the number of predictors as a cut-off point. A distance greater than this critical value may be considered as a potential problem. Only a few cases of the current sample were above the critical value, which is 34.81(see appendix 14).

Moreover, Cook's distance can be applied to assess the overall influence of a case on the model as a whole. Cook and Weisberg (1983) proposed that a Cook's distance value that exceeds 1 would be a cause for concern. It can be seen from the current results that Cook's distance values for the model are between 0.00 and 0.222, which is clearly less than the rule of thumb, and again it seems that the outliers pose no serious threat in the current model. The final method to identify outliers is Leverage statistics. This method measures the effect of the observed value of the dependent variable over the independent variables. Vaus (2002) recommends that any case exceeding the critical Leverage value, which is 0.5, indicates a serious problem and has to be excluded. While Hoaglin and Welsch (1978) recommend using two times the average value $(2(k+1)/n)^9$ as a cut-off point for detecting cases with outlying values. Stevens (2002) suggests that values greater than three times the average $(3(k+1)/n)$ should be checked. The results of the current model show that all cases are less than the critical value suggested by Vaus (2002). Moreover, most of the cases are lower than two times the average (0.223) and only one case is slightly above the boundary of three times the average (0.335). In addition, the current study performs histograms and boxplots for each independent variable to detect outliers. These graphs demonstrate that outliers are not a major concern, as evidenced by the previous statistical methods.

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[9] Where k is the number of independent variables in the model and n is the number of cases (Field, 2013)

Table 6-9: Casewise Diagnostics

Case Number	Std. Residual	C Total	Predicted Value	Residual
30	-2.183	.240	.51195	-.271947
42	-2.197	.210	.48364	-.273636
66	-2.707	.200	.53719	-.337194
113	2.003	.700	.45054	.249461
163	-2.204	.150	.42457	-.274565
168	-2.716	.290	.62830	-.338299
a. Dependent Variable: CIR total				

There are several methods to reduce the impact of the outliers on the model (see: Vaus, 2002; Field, 2013):

- Trim the data: This involves deleting some of the extreme scores. That is to remove certain outlier cases using either percentage-based rule or standard deviation rule.

- Winsorizing: Which is to replace the outlier value to be close to the highest value that is not an outlier.

- Using robust methods: By applying a set of tests that are robust to deviations from assumptions and outliers.

- Transformation: This entails applying a mathematical function to the data to correct distributional problems or outliers.

The first two options, deleting some cases and winsorizing the data, are not preferable options unless there is a good reason justifying these methods, as if the case is strongly believed to not be from the intended sample population or if the deleted or winsorised data are very unrepresentative of the sample, then this may bias the statistical model (Field, 2013). Therefore, it seems that the best of these options is to use robust methods or to transform the data. Robust tests apply some tests which are unaffected by data problems and appear to be reliable, even when the normal assumption is violated; this choice usually involves bootstrapping technique or M-estimators (ibid). With regard to transformation, this method is suitable in regression analysis when there is a non-linear relationship between the dependent and explanatory variables, the distribution of the errors is to some extent not normal, and where there is a lack of homoscedasticity (Cooke, 1998). Furthermore, transformation changes the measurement scale of a variable but not the relationship between the variables (Field, 2013). In addition, Osborne and Waters (2002) point out that when outliers are distorting the data and removing them is not desirable, transformations can be used to improve normality and reduce the impact

of outliers as well. Several common transformation methods are used to explain the relationship between the dependent and independent variables, such as log transformation, square root transformation, reciprocal transformation and reverse score transformations (Field, 2013).

Based on the above discussion, the current study prefers to perform transformation, namely, log transformation[10]. Considering that the normality assumption in the current study, as mentioned before, was not met in addition to some cases of outliers being found, although these outliers do not pose a major problem, the log transformation method can be used to correct these problems and reduce the influence of outliers. Moreover, it can be said that, in general, log transformation is appropriate and widely used in previous disclosure studies (Vaus, 2002). Specifically, log transformation will be applied only to the continuous independent variables on the grounds that the results show that the assumption of normality is not violated with regard to the dependent variable; hence, transforming the dependent variable is not necessary. In addition, Cooke (1998) mentioned that transforming the dependent variable might alter the relationship between the dependent and independent variables.

To deal with the violation of linear regression assumption, Draper (1988) suggests four basic approaches:

1- The "do nothing" approach, that is, to apply analysis to the data without any changes (untransformed),

2- The data-analytic approach, which is using deferent techniques to detect any violation of the assumptions. If any assumption is not met, then the data are altered by elimination or transformation.

3- The model expansion approach; this involves identifying any departures from assumptions. Such departures are modelled directly on the raw data scale by extending the parametric model.

4- The robust approach, that is, to perform non-classical methods which are not sensitive to deviation from the assumptions. Thus, the analysis is conducted on the raw data scale without alteration or modification such as M-estimators, bootstrap and rank-based methods.

Accordingly, the current study runs three regression models: the un-transformation OLS, the log transformation OLS and bootstrap as a robust method. The next section discusses the

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[10] The current study conducts the other types of transformation (square root, reverse score and reciprocal) to the independent variables beside the log transformation, which reveals the best results. Thus, log transformation was chosen.

regression results in details.

6.5 Regression results

The three regression models were performed (the un-transformation model and the log transformation and bootstrap method)[11] to examine the relationship between CIR total and the explanatory variables; the firm characteristics and corporate governance variables. In the following sections the results of these models will be presented.

6.5.1 The first model: un-transformation model

The un-transformation model is still widely accepted, which can be attributed to the fact that it is straightforward to apply and the findings are easy to interpret. In addition, each of the data-analytic, model expansion and robust approaches have some weaknesses as inferential strategies in general and in the linear model particularly in addition to their strengths (Draper, 1988). As explained before, this model aims to answer the second research question: What are the significant factors that motivate CIR total decision-making (the key determinants) of by Saudi listed companies. The model was tested using the forced entry method in SPSS V.22, which means that all the variables that have been hypothesized theoretically to be related to the level of internet reporting were entered into the regression model simultaneously. Table 6-10 provides a summary of the results of the un-transformation OLS model.

Based on table 6-10, the results of the un-transformation model reveal that the current model has significantly improved the prediction of CIR total (F = 6.064, p< 0.01). In addition, the adjusted R^2 (0.362) shows a moderate explanatory power for this model, whereas 36.2% of the variation in CIR total accounts for the explanatory variables. Firm size has the highest standardized B (0.535), which indicates that a change by one standard deviation of firm size results in a 0.535 change in CIR total.

It was found that firm size is the only firm characteristics variable that is significantly and positively associated with CIR total at the 1% significance (P< 0.01). Moreover, the results demonstrate that none of the board of directors' variables are associated significantly with CIR total.

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[11] The current study also performs stepwise, backward, forward regression and factor analysis. Log transformation is the most suitable.

Table   6-10: un-transformation model Coefficients

| Variables | Unstandardized Coefficients | | Standardized Coefficients | | |
	B	S.E.	Beta	t	Sig.
(Constant)	-.093	.137		-.674	.501
Board size	.007	.008	.063	.826	.410
Board independence	.000	.001	.027	.337	.737
Board frequency of meeting	-.009	.006	-.125	-1.628	.106
Role duality	.046	.044	.071	1.050	.296
Block holder ownership	.000	.001	.036	.266	.790
Director ownership	.000	.001	-.027	-.337	.736
Institutional ownership	.000	.001	-.044	-.347	.729
Government ownership	-.001	.001	-.129	-1.156	.250
Audit committee size	-.007	.020	-.028	-.349	.727
Audit frequency of meeting	-.001	.005	-.013	-.167	.868
Audit committee independence	-.001	.001	-.189	-2.632	.009***
Firm size	.102	.019	.535	5.378	.000***
Firm growth	-.001	.013	-.006	-.089	.929
Leverage	.014	.055	.025	.256	.799
Liquidity	.008	.006	.098	1.314	.191
Dividends	.037	.026	.118	1.396	.165
Industry type	.016	.026	.049	.607	.545
Audit type	.040	.028	.105	1.421	.157
Adjusted R Square	0.362				
F	6.064				
Sig.	0.000				
*** Significant at 1% ** Significant at 5%, * Significant at 10%.					

However, board frequency of meeting has a nearly insignificant negative association (.106). Regarding audit committee variables, audit committee independence has a significant and negative relationship with CIR total at the 1% significance level. Both audit committee size and audit committee frequency of meeting have an insignificant relationship with CIR total. Further, the regression findings reveal that no evidence is found to support the significant association between ownership structure variables and CIR total.

In order to overcome the violation of normality assumption and to reduce the influence of outliers, log transformation method was chosen. The following section represents the results of the log transformation model.

6.5.2 The second model: log transformation model

As mentioned before, log transformation will only be used for the continuous independent variables. Table 6-11 summarises the model results.

Table   6-11: log transformation model Coefficients

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.103	.138		-.742	.459
Board size	.007	.008	.067	.878	.382
Board independence	.000	.001	.017	.214	.831
Board frequency of meeting	-.009	.006	-.130	-1.687	.094[*]
Role duality	.049	.044	.075	1.115	.267
Block holder ownership	.000	.001	.031	.233	.816
Director ownership	.000	.001	-.033	-.420	.675
Institutional ownership	.000	.001	-.059	-.474	.637
Government ownership	-.001	.001	-.141	-1.271	.206
Audit committee size	-.004	.020	-.018	-.222	.825
Audit frequency of meeting	-.002	.005	-.029	-.393	.695
Audit committee independence	-.001	.001	-.181	-2.526	.013[**]
Firm size	.104	.019	.538	5.423	.000[***]
Firm growth	8.355E-5	.000	.075	1.139	.257
Leverage	.029	.055	.049	.520	.604
Liquidity	.008	.006	.098	1.314	.191
Dividends	.038	.026	.120	1.441	.152
Industry type	.010	.026	.030	.376	.707
Audit type	.037	.028	.098	1.328	.186
Adjusted R Square	.366				
F	6.170				
Sig.	.000[***]				

*** Significant at 1%, ** Significant at 5%, * Significant at 10%.

From the above table, it can be seen that the adjusted R^2 is slightly improved compared with the un-transformation model (from 36.3% to 36.6%). Furthermore, the F-ratio has barely increased (from 6.064 to 6.170), yet is still significant. Regarding the independent variables, the log transformation model shows similar results to the un-transformation model. The results indicate that only firm size has a significant positive relationship at the 1% significance level, while the other firm characteristics variables are insignificantly associated with CIR total, which is similar to that of the un-transformation model. With a little difference from the

previous model results, board frequency of meeting is marginally negatively associated with CIR total (at the 10% significance level), while the other board of directors variables still have an insignificant relationship with CIR total. In addition, audit committee independence has nearly the same significant negative relationship but at a different significance level (5%). However, neither audit committee size nor audit committee frequency of meeting is significantly associated with CIR total. Moreover, as found in the un-transformation model, none of the ownership structure variables is found to be significant.

It can be concluded that both un-transformation and log transformation models give almost similar results. Thus, bootstrapping method is applied to add more robustness to the findings.

6.5.3 The third model: bootstrap model

Bootstrap sampling means using the original sample to generate several new samples. The bootstrap method can be used nearly to any statistical estimation problem without great concerns about normality assumption (Efron and Tibshirani, 1991). Bootstrapping is a technique that gets over the non-normality problem by estimating the parameters of a statistical model by taking repeated samples with replacement from the original data set. The sample data are considered as a population from which small samples (called bootstrap samples) are generated. The parameter of interest (e.g. the mean or b coefficient) is calculated for each bootstrap sample, from which the sampling distribution of the parameter is estimated. The standard error of the parameter is estimated as the standard deviation of the sampling distribution generated from the bootstrap samples (see: Field, 2013; Gujarati, 1999; Efron and Tibshirani, 1997; Davidson and MacKinnon, 1999). Thus, the current study performs the bootstrapping method to retest the results of the aforementioned models and to enhance the robustness of the findings. Table 6-12 presents the results of this model.

Table 6-12 illustrates that the results of the bootstrapping model are much similar to the results of the un-transformation and log transformation models. Consistent with the two previous models, the results show that only two independent variables, namely audit committee independence and firm size are significantly associated with CIR total. According to this model, firm size was found to be positively associated at the 1% level. The other firm characteristic variables had been found to have an insignificant association with CIR total, which is similar to the un-transformation and log transformation models. All board of director variables indicate the same insignificant relationship, except for board frequency of meeting variable. Although board frequency of meeting was found to be negatively associated at the 10% significance level in the log transformation model, it indicates an insignificant association

Table   6-12: Bootstrapping model Coefficients

Variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-.093	.144		-.674	.504
Board size	.007	.008	.063	.826	.415
Board independence	.000	.001	.027	.337	.708
Board frequency of meeting	-.009	.006	-.125	-1.628	.169
Role duality	.046	.053	.071	1.050	.358
Block holder ownership	.000	.001	.036	.266	.843
Director ownership	.000	.001	-.027	-.337	.733
Institutional ownership	.000	.001	-.044	-.347	.765
Government ownership	-.001	.001	-.129	-1.156	.278
Audit com. size	-.007	.018	-.028	-.349	.707
Audit frequency of meeting	-.001	.007	-.013	-.167	.888
Audit committee independence	-.001	.000	-.189	-2.632	.006***
Firm size	.102	.018	.535	5.378	.001***
Firm growth	-.001	.023	-.006	-.089	.957
Leverage	.014	.058	.025	.256	.803
Liquidity	.008	.007	.098	1.314	.181
Dividends	.037	.027	.118	1.396	.163
Industry type	.016	.027	.049	.607	.547
Audit type	.040	.027	.105	1.421	.146
Adjusted R^2	.362				
F	6.064				
Sig.	.000^b				

*** Significant at 1%, ** Significant at 5%, * Significant at 10%.

in bootstrapping model, as with the un-transformation model. With regard to audit committee variables, the results were similar to that of un-transformation and log transformation models. Audit committee independence reveals the same significant negative relationship with CIR total at the 1% significance level. In addition, audit committee size and audit committee frequency of meeting are not significantly associated with CIR total. Furthermore, the ownership structure variables show results similar to the results of the other two models, whereby no significant association was found for any of the variables with CIR total.

In short, it can be concluded that the results of the bootstrapping model are consistent with the results of the un-transformation and log transformation models. Draper (1988) suggests that it is beneficial to perform both the original model and one or more robust methods in parallel and compare the results. If these methods produced major differences, then applying other approaches is advisable. If not, this adds to the model robustness. Since the bootstrapping model confirms these results, it adds more robustness of the findings of this study. Thus, it seems that almost the same two variables, audit committee independence and firm size, were found to be significant in all the three models.

In addition to conducting the full regression models, reduced models were also conducted in this study to enhance the fit of the model and overcome the problem related to including too

many independent variables. The next section describes reduced models and the results of these models.

6.5.4 Supplemental analysis: reduced model

Although having too many independent variables in the model may be beneficial, it can be argued that this inclusion might add more difficulties in terms of assessing which variables have a significant effect as it is possible to find minor multicollinearity between the variables (Curwin and Slater, 2007). However, Johnson et al. (1987) state that including too many independent variables should not be a major concern as long as the decision to include any variable is made on a rational basis and advanced computer programs are available. Hence, to deal with the issue related to having many independent variables and to determine the most significant variables that explain the variability in CIR, reduced regression models were conducted in the current study. Debreceny et al. (2002) illustrated that reduced models improve the fit of the model as well as enhance the explanatory power, which better justifies the findings compared to the complete model. Therefore, the independent variables were refined by reducing the full regression models based on variables found to be significant in the full regression models besides the inclusion of additional variables, which are the most significant factors with higher contribution value to the model as indicated by (t) values. This approach was utilized following a number of researchers, such as Hanifaa (1999), Debreceny et al. (2002), Haniffa and Cooke (2002), Abdelsalam et al. (2007) and Arafa (2012), unlike Wallace and Naser (1995), who included the variables in the reduced regression models based on the importance of the independent variables, as inferred from previous research (that is if the variable found to be significant in four or more countries). Table 6-13 summarises the results of the reduced models.

As demonstrated in Table 6-13, the adjusted R^2 has been enhanced in all the reduced models from the full regression models, which improves the potential of explaining variability in CIR total. The un-transformation reduced model produced the highest adjusted R^2, which is 0.422 (0.362 in the full un-transformation model), followed by the log transformation reduced model, where its adjusted R^2 is 0.420 and the lowest adjusted is R^2 (0.413), which was found in the bootstrapping reduced model. With regard to significance of variables, three variables (firm size, liquidity and audit committee independence) were found to be significant in all the reduced models compared to only two significant variables (firm size and audit committee

independence) in all the full models. The results indicate that firm size in all the three reduced models is associated positively at the same 1% significant level, which is identical to the full models' results. However, unlike the full regression models, liquidity is found to be negatively associated at the 10% significance level in all reduced models. The un-transformation reduced model is the only model that shows a significant positive relationship between dividends and CIR total at the 10% significance level. Similar to the full regression models, no significant association was found between the other firm characteristics variables and the CIR in the three reduced models. In terms of board of director variables, only board

frequency of meeting is found to be significantly associated with CIR total in both the un-transformation and log transformation reduced models at the 10% significance level, which is similar to the full log transformation model. Concerning the ownership structure variables, the results indicate that government ownership has the same insignificant association with CIR total in all the reduced models, which is consistent with the full regression models.

Similar to the full regression models, only audit committee independence has a significant negative association with CIR total at a slightly different level of significance (1% in the un-transformation and log transformation reduced models and 5% in the bootstrapping reduced model). Consequently, it can be stated that the findings of the reduced models are consistent – to some extent – with the results of the full regression models (see table 6-14). The results indicate that two variables, namely firm size and audit committee independence, were found

Table 6-13: Reduced models (un-transformation, log transformation and bootstrapping)

Variables	Un- transformation model					Log transformation model					Bootstrapping model				
	B	Std. E.	Beta	t	Sig.	B	Std. E.	Beta	t	Sig.	B	Std. E.	Beta	t	Sig.
(Constant)	-.074	.117		-.637	.525	-.082	.118		-.698	.486	-.096	.112		-.820	.405
Board size	.010	.007	.093	1.368	.173	.010	.007	.090	1.324	.188	.010	.008	.095	1.378	.180
Board frequency of meeting	-.009	.005	-.129	-1.967	.051*	-.009	.005	-.128	-1.939	.054*	-.009	.005	-.118	-1.778	.103
Role duality	.044	.041	.065	1.072	.286	.045	.041	.066	1.085	.279	.046	.056	.068	1.110	.391
Government ownership	-.001	.001	-.109	-1.444	.151	-.001	.001	-.123	-1.635	.104	-.001	.001	-.114	-1.493	.179
Audit committee independence	-.001	.000	-.168	-2.677	.008***	-.001	.000	-.169	-2.699	.008***	-.001	.000	-.177	-2.807	.010**
Firm size	.098	.016	.500	6.123	.000***	.100	.016	.508	6.212	.000***	.104	.015	.532	6.661	.001***
Liquidity	-.002	.001	-.116	-1.895	.060*	-.002	.001	-.116	-1.891	.060*	-.002	.004	-.120	-1.936	.072*
Dividends	.034	.020	.108	1.689	.093*	.033	.020	.102	1.597	.112	.003	.006	.030	.486	.627
Audit type	.035	.025	.090	1.411	.160	.034	.025	.087	1.370	.173	.029	.025	.076	1.201	.244
Adjusted R^2	.422					.420					.413				
F	14.487					14.370					13.964				
Sig.	.000					.000					.000				
*** Significant at 1%, ** Significant at 5%, * Significant at 10%.															

to be significant in all the full models and confirmed by the reduced models. The difference between the full regression models and the reduced models is with regard to the three variables of board frequency of meeting, liquidity and dividends. Board frequency of meeting was significant only in the full log transformation model and un-transformation and log transformation reduced models. Moreover, liquidity is significant merely in all reduced models and dividends is found to be significant in only the un-transformation reduced model. The next section will discuss these results in detail.

Table   6-14: Full and reduced regression models for CIR total

Variables	Full regression			Reduced Regression		
	1	2	3	4	5	6
(Constant)	-.674	-.742	-.093	-.637	-.698	-.820
Board size	.063 .826	.067 .878	.007 .826	.093 1.368	.090 1.324	.095 1.378
Board independence	.027 .337	.017 .214	.000 .337			
Board frequency of meeting	-.125 -1.628	-.130 -1.687[*]	-.009 -1.628	-.129 -1.967[*]	-.128 -1.939[*]	-.118 -1.778
Role duality	.071 1.050	.075 1.115	.046 1.050	.065 1.072	.066 1.085	.068 1.110
Block holder ownership	.036 .266	.031 .233	.000 .266			
Director ownership	-.027 -.337	-.033 -.420	.000 -.337			
Institutional ownership	-.044 -.347	-.059 -.474	.000 -.347			
Government ownership	-.129 -1.156	-.141 -1.271	-.001 -1.156	-.109 -1.444	-.123 -1.635	-.114 -1.493
Audit committee size	-.028 -.349	-.018 -.222	-.007 -.349			
Audit frequency of meeting	-.013 -.167	-.029 -.393	-.001 -.167			
Audit committee Independence	-.189 -2.632[***]	-.181 -2.526[**]	-.001 -2.632[***]	-.168 -2.677[***]	-.169 -2.699[***]	-.177 -2.807[**]
Firm size	.535 5.378[***]	.538 5.423[***]	.102 5.378[***]	.500 6.123[***]	.508 6.212[***]	.532 6.661[***]
Firm growth	-.006 -.089	.075 1.139	-.001 -.089			
Leverage	.025 .256	.049 .520	.014 .256			
Liquidity	.098 1.314	.098 1.314	.008 1.314	-.116 -1.895[*]	-.116 -1.891[*]	-.120 -1.936[*]
Dividends	.118 1.396	.120 1.441	.037 1.396	.108 1.689[*]	.102 1.597	.030 .486
Industry type	.049 .607	.030 .376	.016 .607			
Audit type	.105 1.421	.098 1.328	.040 1.421	.090 1.411	.087 1.370	.076 1.201
Adjusted R^2	**0.362**	**.366**	**.362**	**.422**	**.420**	**.413**
F	**6.064**	**6.170**	**6.064**	**14.487**	**14.370**	**13.964**
Sig.	**0.000**	**.000[***]**	**0.000**	**.000**	**.000**	**.000**

- 1. Un-transformation model / 2. Log transformation model / 3. Bootstrap model / 4. Reduced model un-transformation model/
   5. Reduced model log transformation model / 6. Reduced model bootstrap
- Upper value is Coefficient and lower value is T value.
- [***] Significant at 1%, [**] Significant at 5%, [*] Significant at 10%.

6.6 Discussion of the regression results

The findings of the full and reduced regression models, as illustrated in the previous section, show that those models – to a large extent – are consistent. This section discusses in detail the results of all the models for each group of independent variable.

6.6.1 Firm characteristics variables

This category includes seven variables that have been examined in this study to determine their influence on CIR total using two means of analysis, namely bivariate and multivariate. Table 6-15 demonstrates a summary of the findings of both the bivariate and multivariate (regression) analyses of the relationships between the firm characteristics variables and CIR total.

Table   6-15: A summary of the findings of firm characteristics variables

Variables	Bivariate analysis		Full regression			Reduced Regression		
	1	2	3	4	5	6	7	8
Firm size	+/***	+/***	+/***	+/***	+/***	+/***	+/***	+/***
Firm growth	-	-	-	+	-			
Leverage	+/**	+/**	+	+	+			
Liquidity	-/***	-	+	+	+	-/*	-/*	-/*
Dividends	+/***	+/***	+	+	+	+/*	+	+
Industry type	+	+	+	+	+			
Audit type	+/***	+/***	+	+	+	+	+	+

Note: 1. Pearson correlation / 2. Spearman's rho / 3. Un-transformation model / 4. Log transformation model / 5. Bootstrap model / 6. Reduced model un-transformation model/ 7. Reduced model log transformation model / 8. Reduced model Bootstrap
- *** Significant at 1%, ** Significant at 5%, * Significant at 10%.

Based on the results in table 6-15, five variables are found to have a significant relationship with CIR total under bivariate and multivariate analyses at different levels. Firm size was the only variable that has been significant in all models. Moreover, two variables (liquidity and dividends) show different results in the two models of analysis and the other two variables (leverage and audit type) are found to be significant in only the bivariate analysis. It has been suggested that if a significant relationship exists in the bivariate analysis but not in the multivariate analysis, then this may be an indication of multicollinearity among the independent variables, even though it is a minor one, which affects the significance of the variable when multiple regression is conducted (Hossain et al., 1994).

The variation in the results of bivariate and multivariate analyses appears in many previous studies (e. g. Hossain et al., 1994; Haniffa, 1999; Ghazali, 2004; Abdel-Fattah, 2008). However, the current study will depend mainly on the results of the multivariate analysis, considering that the purpose of the study is to assess the extent of the relationship, if any, between CIR and groups of explanatory variables simultaneously.

Consistent with the mainstream prior CIR research (e.g. Owusu-Ansah, 1998; Debreceny and Gray, 1999; Ashbaugh et al., 1999; Craven and Marston, 1999; Ettredge et al., 2001; Debreceny

et al., 2002; Marston, 2003; Marston and Polei, 2004; Xiao et al., 2004; Kelton and Yang, 2008; Aly et al., 2010; Allam, 2006; Oyelere et al., 2003; Joshi and Al-Bastak, 2000; Pirchegger and Wagenhofer, 1999; Ettredge et al., 2002a; Oyelere et al., 2003;; Barako and Tower, 2008, Al-Motrafi, 2008; Elsayed, 2010 and Al-Janadi et al., 2013), the finding of the current study shows that firm size has a positive impact on CIR total at the 1% significance level in both the multivariate and bivariate analyses. Hence, large Saudi listed companies are more likely to disseminate more information online than small companies are. This relationship can be explained according to the widely used theories in the disclosure literature: agency, legitimacy and cost benefit theories. Based on agency theory, large companies are more likely to have a higher proportion of outside equity, which results in higher agency costs. These high agency costs can be reduced by increasing the level of disclosure. In addition, it is assumed that larger companies naturally are subject to more information asymmetry among different groups, such as investors, suppliers, customers and managers; this in turn increases the demand for more disclosure to alleviate this information asymmetry problem (Debreceny et al., 2002). Moreover, larger companies in general have a diverse range of products and complicated distribution networks. Thus, their management information systems and databases are more complicated than those of small companies. Therefore, based on agency theory, disclosure costs may be generally lower for larger companies (Oyelere et al., 2003).

To explain the positive relationship between firm size and CIR, legitimacy theory assumes that the managers of large companies hope that disclosing more information could lead to reducing monitoring and other costs. Moreover, large companies are subject to several political costs, such as nationalization, regulation, or expropriation, and therefore tend to disclose more extensive information to overcome the threat of government intervention and reduce these costs (Oyelere et al., 2003).

Finally, according to cost benefit theory, collecting, presenting and publishing information online requires a high cost, thus large companies are more likely than small ones to have the ability to afford such high-cost disclosure and benefit from large volume products, which result in reducing the unit cost regarding disclosed information. Furthermore, small companies are more concerned about disclosing extensive information on their websites as this may threaten their competitive position (Buzby, 1975). As a result, the hypothesized positive relationship between firm size and CIR total in Saudi listed companies (hypothesis H1.1) is accepted in this study. This finding is consistent, as mentioned above, with most of the previous studies, where firm size was found to be a significant explanatory variable.

Regarding firm growth, the results of both the bivariate and multivariate analyses reveal a non-

significant and negative (except for the full log transformation model, where it is insignificant and positive) relationship between the Saudi listed companies' growth and CIR total. The results show that firm growth has no impact on CIR total. This result is consistent with McNally et al., (1982), Eng and Mak (2003), Ronnie lo (2009), Albassam (2014) and Soriya and Dhaigude (2016), but not in line with Ahmed (2015) Bollen et al. (2006) and Debreceny et al. (2002), who found a significant relationship between firm growth and CIR total. The negative relationship that is found between firm growth and CIR total (positive in only the full log transformation model) supports the argument that, for firms with higher rates of growth, proprietary cost associated with disclosing more information increases since information disclosure may cause the loss of competitive advantages, hence, managers will be barely willing to disclose. Another explanation for the negative relationship could be that the fast-growing companies are disclosing enough information through other means, such as analysts and media followings, which result in less demand for additional disclosure (Debreceny et al., 2002). In addition, high-rate growing companies have to assign substantial human and financial resources to manipulate their high growth, which may result in a lack of investment in adequate internet reporting facilities (Bollen et al., 2006). This negative result is consistent with several prior studies, such as La Rosa and Liberatore (2014), Nekhili et al., (2016), Albassam (2014), Bollen et al. (2006) and Debreceny et al. (2002). Based on the above arguments and findings of this study, the hypothesis that there is a significant relationship between firm growth and CIR total of Saudi listed companies (hypothesis H1.2) is rejected.

In terms of company leverage, contradictory results are indicated between the bivariate and multivariate analyses. Although the findings show a positive relationship in all models, only the bivariate analysis reveals a positive significant association between leverage and CIR total at the 5% level. None of the multivariate analyses have supported the influence of leverage on CIR total by Saudi listed companies. This positive relationship can be explained according to the widely used agency theory, which presumes that high rate leverage creates agency costs; therefore, managers may disclose additional information via the internet to increase the level of monitoring and help mitigate the conflict between debt-holders and shareholders (Debreceny et al., 2002; Schipper, 1981). The empirical findings regarding the impact of leverage on corporate disclosure are contradicted. However, some prior studies, consistent with the current study's result, report no significant association between leverage and CIR practices such as Larrán and Giner (2002), Debreceny et al. (2002), Oyelere et al. (2003) Bollen et al. (2006), Nekhili et al. (2016), Richardson and Welker (2001), Haniffa and Cooke (2002), Abdelsalam and Street (2007) and Aly et al. (2010). While Ettredge et al. (2002a), Ismail (2002), Xiao et

al. (2004), Al-Saeed, (2006b), Barako et al. (2006), Alshowaiman (2008), Elsayed (2010) and Omar and Simon (2011) find that leverage has a positive influence on internet reporting. As the study depends mainly on the results of multivariate analysis, as mentioned earlier, and considering that multivariate analyses reveal that leverage is not significantly associated with the extent of internet reporting, the hypothesis that there is a significant relationship between leverage and CIR total of Saudi listed companies (H1.3) is rejected.

According to liquidity, the obtained results were conflicted between the bivariate and multivariate analyses. Liquidity shows its negative relationship with CIR total at the 1% and 10% levels of significance in bivariate (Pearson) and multivariate reduced models, respectively. This result may be explained from the agency theory perspective, which assumes that companies may disclose more information on their websites if their liquidity ratio is low, in order to satisfy shareholders' and creditors' needs for information. In addition, by introducing more disclosure, managers of low liquidity ratio companies alleviate the fears of shareholders and creditors and show their awareness of this problem (Wallace et al.,1994). While a significant negative relationship has been documented in Wallace et al. (1994) and Wallace and Naser (1995), other prior studies report no association between liquidity and the level of corporate disclosure, such as Ahmed and Courtis (1999), Elzahar and Hussainey (2012), Belkaoui and Kahl (1978) and Aly et al. (2010). However, the positive relationship revealed in the full regression models is consistent with Oyelere et al. (2003), Elshandidy et al., (2013) and Ahmed (2015). Based on the results of reduced models of the multivariate analysis, it can be stated that hypothesis 1.4 on the significant association between liquidity and CIR is accepted.

The statistical analyses regarding the association between dividends and the level of internet disclosure in Saudi Arabia reveal the same results, although the levels of significance are different. Although the bivariate analyses indicate a positive relationship at the 1% significance level, the reduced un-transformation model reports this relationship at the 10% significance level. Other multivariate analyses show a positive but insignificant association between dividends and CIR total. This positive relationship can be explained through agency and signalling theories, which suggest that managers of high dividend companies may tend to disclose more information to justify the compensation payment (Ntim and Soobaroyen, 2013); to ensure the financial ability of the company and its contribution to the society (Ntim *et al.,* 2012); and to attract investors and signal shareholders' confidence (Haniffa and Cooke, 2002). In line with this study's results, some prior studies (Archambault and Archambault, 2003; Adjaoud and Ben-Amar, 2010) find that dividends have a positive and significant influence on

disclosure. Based on the statistical results of the current study, the hypothesis that suggests a significant relationship between dividends and CIR total (H1.5) is accepted.

No empirical evidence has been found to support the prediction that financial companies are more likely to disclose more information in their websites. Both the bivariate and multivariate analyses (full regression models only) show insignificant and positive relationship between industry type and CIR total. The reason for the insignificant association may be attributed to the same disclosure requirements that all Saudi listed companies follow in the Saudi environment. The results of previous studies regarding this association are mixed. While a number of studies (Wallace et al. 1994; Craven and Marston,1999; Trabelsi and Labelle, 2006; Barako and Tower, 2008; Owusu-Ansah,1998; Joshi and Al-Bastaki, 2000; Abdelsalam et al., 2007; Eng and Mak, 2003; Akhtaruddin, 2005; Al-Motrafi, 2008; Desoky, 2009) are consistent with the current study's finding, where they found no association between industry type and CIR total, other studies reveal that this relationship seems to be significant using different categories for industries (e.g. financial and non-financial, IT industry or not, or industry sector), such as Ismail (2002), Oyelere et al. (2003), Xiao et al. (2004), Hussainey and Al-Nodel (2008) and Alshowaiman (2008). Consequently, the proposed significant relationship between industry type of Saudi listed companies and CIR total, which is represented by H 1.6, is rejected in the current study.

Only weak evidence was found to support the effect of audit type on the level of internet disclosure in Saudi Arabia. The bivariate analyses show a positive association between audit type and CIR total at the 1% significance level. However, audit type was found to have a positive relationship, although not significant in all of the multivariate analyses models. Most of the prior studies documented either a positive or no significant relationship. Many studies, consistent with the current study's finding, found no evidence for the significance of the relationship between the Big4 companies and the level of CIR such as Hossain et al. (1994), Barako et al. (2006), Eng and Mak (2003), Aly et al. (2010), Hassan et al. (1999), Al-Modahki (1995), Al-Saeed (2006b), Al-Shammari and Al-Sultan (2010) and Aly et al. (2010). Likewise, Forker (1992) and Wallace et al. (1994) observed a positive yet insignificant relationship. However, on the other hand, Xiao et al. (2004); Trabelsi and Labelle (2006), Al-Shammari, (2007), Craswell and Taylor (1992), Ahmed (1996), Mahmood (1999), Al-Motrafi (2008) and Kelton and Yang (2008) found a significantly positive relationship. Presumably, the rationale justification for this result might be that the auditors' responsibility is limited to the requirements of mandatory disclosure. Thus, in general, auditors do not request their clients to report additional information that exceeds the requirements of the accounting standards (Al-

Saeed, 2006a). This may also indicate that auditors in Saudi Arabia are not so far involved in the CIR practices.

Based on above arguments and the multivariate analyses results of the current study, the hypothesis that assumes a significant relationship between audit type and CIR total of the Saudi listed companies (H1.7) is rejected.

Although the findings regarding firm characteristics are contradicted, three of them, namely firm size, liquidity and dividends, are found to be significantly associated with CIR total. According to the above discussion, the current study's findings conclude that firm characteristics are considered significant factors that motivate the decision-making regarding CIR by Saudi listed companies. This answers the first sub-question Q.2-1, and H1 on the influence of firm characteristics variables on CIR total is accepted.

Table 6- 16 illustrates a summary of the tested hypotheses and the findings of the regression analysis of the relationships between firm characteristics variables and CIR total.

Table   6-16: A summary of the hypotheses and findings of firm characteristics variables

Variables	Hypothesis No.	Expected sign	Finding sign	Finding significance	Hypothesis status
Firm size	1.1	+	+	Significant at 1% level	Accepted
Firm growth	1.2	+/-	-	Insignificant	Rejected
Leverage	1.3	+/-	+	Insignificant	Rejected
Liquidity	1.4	+/-	-	Significant at 10% level	Accepted[*]
Dividends	1.5	+/-	+	Significant at 10% level	Accepted[**]
Industry type	1.6	+/-	+	Insignificant	Rejected
Audit type	1.7	+/-	+	Insignificant	Rejected

*   In reduced models only.
** Only in un-transformation reduced model.

6.6.2 Corporate governance variables

As mentioned in chapter 3, corporate governance variables include three main sets of variables: board of directors' variables, ownership structure variables and audit committee variables. The results of each group are discussed in detail in the following sections.

6.6.2.1 Board of Directors

To explore the impact of corporate board of directors' characteristics variables on CIR total, four variables, namely board size, board independence, board frequency of meeting and role duality, were investigated. A summary of the results of these variables is provided in Table 6-17.

Table   6-17: A summary of the findings of board of directors variables

Board Variables	Bivariate analysis		Full regression			Reduced Regression		
	1	2	3	4	5	6	7	8
Board size	+/***	+/***	+	+	+	+	+	+
Board independence	-/ **	-/***	+	+	+			
Board frequency of meeting	-	-	-	- /*	-	-/ *	-/*	-
Role duality	+	+	+	+	+	+	+	+

Note: 1. Pearson Correlation / 2. Spearman's rho / 3. Un-transformation model / 4. Log transformation model / 5. Bootstrap model / 6. Reduced model un-transformation model/ 7. Reduced model log transformation model / 8. Reduced model bootstrap
- *** Significant at 1%, ** Significant at 5%, * Significant at 10%.

As indicated in Table 6-17, bivariate and multivariate analyses reveal contradictory results regarding board size variable. Only the bivariate analysis shows a significantly positive relationship at the 1% level; however, the multivariate analysis shows that board size has a positive relationship with CIR total although this is not statistically significant. This means that the size of the board of directors in Saudi listed companies has no influence on the level of CIR total. Agency theory provides an explanation for the positive relation between board size and CIR total. As the shareholders select the board of directors to represent their interests, these are expected to provide a high level of disclosure (Davidson et al., 1996). Moreover, by increasing the board size, the chance of widening the experiences diversity on the board may increase, which in turn can improve the disclosure practice (Abdel-Fattah, 2008). In the Saudi context, the insignificant relationship could be attributed to the notion that the geographic location of a country can mitigate the relationship between board size and the level of voluntary disclosure (Samaha et al., 2015). This insignificant relationship is consistent with many prior studies (e.g. Lakhal, 2003; Arcay and Vazquez, 2005; Cheng and Courtenay, 2006; Donnelly and Mulcahy, 2008; Al-Motrafi, 2008; Hussainey and Al-Najjar, 2012; Al-Shetwi et al., 2011; Arafa, 2012). Based on the statistical findings of the multivariate analysis, the current study finds no evidence on the influence of board size on CIR total in the Saudi context. Accordingly, H2.1 is rejected. Similarly, board independence is found to be significantly negative in only the bivariate analysis at the 5% level and at the 1% level in the first and second models, respectively. In contrast, the multivariate analysis found no evidence of a significant influence of board independence on CIR total of Saudi listed companies. These different results may be attributed to the variation in the legal and institutional environments of countries, which affect the independent directors' role on the board (Abdel-Fattah, 2008). Furthermore, the concept of board independence is considered a new concept in developing countries that have recently implemented corporate governance practices, which makes it more difficult to apply these (Mahadeo et al., 2012). Independence of the board may be subject to question since a sense of loyalty may occur between the independent directors and those members who appointed them in the companies. Hence, the independent directors may not monitor management behaviour

as adequately as they should do, and therefore they may have no influence on the level of online disclosure. Another concern that may affect board independency is that those independent directors may lack the appropriate information about the company. This may result in the loss of effective monitoring and independence, which in turn limits the independent directors' incentives to increase the quantity and quality of disclosed information via the website of the companies (Weir and Laing, 2000). In developing countries, as in the case of Saudi Arabia, these criticisms are increasing where there is no clear rule or criterion for appointing independent directors (Abdel-Fattah, 2008). In particular, culture, informal social relations and political connections have a crucial influence on the Saudi corporate environment to a large extent (Haniffa and Hudaib, 2007; Hussainey and Al-Nodel, 2008 and Albassam, 2014). Although the current study's findings are consistent with many previous studies (Ho and Wong, 2001; Haniffa and Cooke, 2002; Lakhal, 2003; Xiao et al., 2004; Mangena and Pike, 2005; Ghazali and Weetman, 2006; Barako and Tower, 2008; Elsayed, 2008; Al-Shammari and Al-Sultan, 2010; Arafa, 2012; Zabri et al., 2016), other studies have reported mixed results. For example, while Eng and Mak (2003), Abdelsalam and Street (2007), Abdel-Fattah (2008) and Albassam (2014) find a negative relation, Forker (1992), Cheng and Courtenay (2006), Lim et al. (2007), Huafang and Jianguo (2007), Kelton and Yang (2008) and Samaha et al. (2015) find a positive relationship between board independence and level of disclosure. Based on the statistical findings of the multivariate analysis, no evidence is found in the current study for the influence of board independence on CIR total in the Saudi context. Consequently, H 2.2 is rejected in this study.

Board frequency of meeting has been found to have a negative and marginally significant relationship with CIR total in the multivariate analysis only at the 10% level of significance. This implies that more frequent board meetings may not enhance the level of corporate disclosure and reducing board frequent meetings may increase the level of disclosure. This negative association can be explained by stewardship theory, which proposes that executive mangers are expected to be trustworthy, thus, there is no need for the board of directors to participate in the company's routine activities (Letza et al., 2004; Monks and Minow, 2011). Furthermore, more frequent board meetings can raise the cost in the form of meeting fees, travel expenses and managerial time, which may negatively affect the disclosure level (Vafeas, 1999). Jensen (1993) supports this by stating that frequent board meetings are not necessary unless the company is facing difficulties. This result is in line with many studies (Xie et al., 2003; Fich and Shivdasani, 2006; Jackling and Johl, 2009). In the light of the above discussion, the multivariate analysis findings provide evidence that the frequency of board meetings has a

significant influence on CIR total hence, H 2.3 is accepted.

Regarding role duality, the results of the current study indicate that none of the role duality coefficients are statistically significant. This means that the segregation between the chairman and CEO roles in Saudi listed companies has no influence on the level of CIR total although most of the Saudi listed companies (94.1%) separate the two roles of chairman and CEO, as recommended by the SCGC. However, the results reveal a positive relationship between role duality and CIR level. According to stewardship theory, CEOs are trustworthy people who aim to work in the best interests of the company and shareholders (Davis et al., 1997). Thus, the combination of the two roles should not impair the board's effectiveness in governing and monitoring management and may lead to enhancing the disclosure level (Haniffa and Cooke, 2002). Moreover, role duality enables CEOs, due to their good knowledge of the company, to facilitate communication and information flow between the board and management, which in turn could improve the decision-making process by the board and ensure a higher level of disclosure (Baliga et al., 1996; Brickley et al., 1997; Mathieu et al., 2006). Additionally, Samaha et al. (2015) suggest that the geographic location of a country can moderate the relationship between role duality and disclosure level, which is worth taking into consideration in the Saudi context. Consistent with the current study, many studies that examine the relationship between role duality and CIR find this relationship to be insignificant (e.g. Haniffa, 1999; Haniffa and Cooke, 2002; Arcay and Vazquez, 2005; Cheng and Courtenay, 2006; Abdelsalam and Street, 2007; Abdelsalam and El-Masry, 2008; Kelton and Yang, 2008; Al-Motrafi, 2008; Kent and Stewart, 2008; Abdel-Fattah, 2008; Al-Shammari and Al-Sultan, 2010; Elsayed, 2010; Arafa, 2012; and Kamalluarifin, 2016). Based on the statistical findings, H 2.4 on the significant association between role duality and CIR total is rejected in the current study.

In brief, as can be seen from the discussion above, the results indicate a weak association between board characteristics variables and the CIR total in Saudi listed companies, whereby only one variable, namely board frequency of meeting, is marginally significant. This means that H2, which postulated a significant relationship between board of directors variables and CIR total by Saudi listed companies, is not supported in the current study and this also answers the third sub-question Q2.3. Table 6-18 summaries the hypotheses and findings of the board characteristics variables.

Table 6-18: A summary of the hypotheses and findings of board characteristics variables

Board characteristics variables	Hypothesis No.	Expected sign	Finding sign	Finding significance	Hypothesis status
Board size	2.1	+/-	+	Insignificant	Rejected
Board independence	2.2	+/-	+	Insignificant	Rejected
Board frequency of meeting	2.3	+/-	-	Significant at 10% level	Accepted
Role duality	2.4	+/-	+	Insignificant	Rejected

6.6.2.2 Ownership structure

Table 6-19 shows the results related to the four ownership features examined in this study, which are block holder ownership, director ownership, institutional ownership and government ownership. As can be seen from the table, the results indicate the absence of the relationship between ownership structure and CIR total. The following paragraphs discuss the results of each variable.

Table 6-19: A summary of the findings of ownership structure variables

Ownership structure variables	Bivariate analysis		Full regression			Reduced Regression		
	1	2	3	4	5	6	7	8
Block holder ownership	+**	+***	+	+	+			
Director ownership	+	-	-	-	-			
Institutional ownership	+	+	-	-	-			
Government ownership	+***	+***	-	-	-	-	-	-

Note: 1. Pearson Correlation / 2. Spearman's rho / 3. Un-transformation model / 4. Log transformation model / 5. Bootstrap model / 6. Reduced model un-transformation model/ 7. Reduced model log transformation model / 8. Reduced model bootstrap
- *** Significant at 1%, ** Significant at 5%, * Significant at 10%.

With respect to block holder ownership, only the bivariate analysis shows a significant relationship between block holder ownership and CIR total at the 5% and 1% level in the first and second models, respectively, yet the multivariate analysis fails to provide any evidence for the significance of this relationship. This result implies that the percentage of shareholders who hold 5% or more has no influence on the level of corporate internet disclosure. This result finds support in the prior research by Ashbaugh et al. (1999); Eng and Mak (2003); Al-Saeed (2006b); Ghazali and Weetman (2006); Abdelsalam et al. (2007); Al-Motrafi (2008); Abdel-Fattah (2008); and Arafa (2012). In contrast, other studies (e.g. Haniffa and Cooke, 2002; Huafang and Jianguo, 2007; and Desoky, 2009) find a positively significant association between block holder ownership and level of disclosure. Also, this finding is in contrast to Abdelsalam and Street (2007), Kelton and Yang (2008) and Elsayed (2010), who report a significant negative relationship. These inconsistent results of previous studies may be due to contextual differences. While developed countries obtain efficient external governance structures that can improve corporate disclosure, developing countries experience, in general,

poor legal systems, which may affect the quality and level of disclosure (Bauwhede and Willekens, 2008; Robertson et al., 2012; Salterio et al., 2013). However, it may be worthwhile to note that other factors may influence the association between block holder ownership and CIR total, such as the type of block holders, i.e. internal, external, and the company's performance. Moreover, Ghazali (2004) suggests that the non-significant relationship of block holder ownership with CIR total could be attributed to include other aspects of ownership structure (director, institutional, and government) in the regression models, even though no high correlation is found between them. According to the findings of the multivariate analysis, hypothesis 3.1, which posited a significant relationship between block holder ownership and CIR total in the Saudi listed companies, is rejected.

Another conflict in the results between bivariate and multivariate analyses is related to government ownership. Based on the findings of the bivariate analysis, it is found that government ownership is positively significant at the 1% level. In contrast, all statistical results of the multivariate analysis reveal that there is no significant association between government ownership and CIR total and that the direction of this relationship is negative. This means that government ownership does not affect the online disclosure of Saudi listed companies. A possible explanation of this result is that in a developing country like Saudi Arabia, it may be expected that companies with high government ownership have a strong political connection; hence, according to the political theory, they may disclose less detailed information online to protect the political interests of their beneficial government owner (Ghazali and Weetman, 2006). In addition, the governmental owners are more likely to obtain the required information internally as they probably have easier access to the company's different sources (Eng and Mak, 2003). Based on information cost theory, as long as the needed information is available on demand internally, there is no reason to expend additional costs to disclose more information on the company's website (Xiao et al., 2004). In the Saudi context, government owners in companies with a high proportion of governmental ownership, such as SABIC and the Saudi Electricity company, are foreseen as long-term investors and their shares are not traded in public; therefore, they lack the incentive for internet-based voluntary disclosures due to the weak demand for disclosure (Eng and Mak, 2003 and Xiao et al., 2004). This finding is in line with many prior studies that report the same negative and insignificant relationship (e.g. Xiao et al., 2004; Ghazali and Weetman, 2006; Huafang and Jianguo, 2007; Al-Motrafi, 2008; Alshowaiman, 2008; Arafa, 2012). Based on the empirical findings of the multivariate analysis, this study fails to find any support for a significant association between government ownership and CIR total in Saudi listed companies. Consequently, H 3.4 is rejected in the current study.

Both director and institutional ownership show a non-significant relationship; however, the bivariate and multivariate analyses show differences in direction. Regarding director ownership, no empirical evidence is found to support the association between director ownership in Saudi listed companies and CIR total. The results suggest that the percentage of total shares owned by the director has no influence on CIR total in the Saudi stock exchange. It is likely that the logic for the negative result is that director ownership is expected to support the interests of shareholders and, therefore, decrease the need for monitoring and controlling management behaviour by shareholders (Kelton and Yang, 2008; Samaha et al., 2012). Thus, companies with higher percentage of director ownership may have less incentive to provide more voluntary disclosure (Eng and Mak, 2003). Furthermore, the absence of an association between director ownership and CIR total may be attributed to the low proportion of director ownership in the Saudi context (the mean of director ownership is only 12.72 %), which is not enough to promote managers to produce more disclosure to substitute shareholder monitoring (Huafang and Jianguo, 2007). Many previous studies confirm the findings of this study (e.g. Wallace and Naser, 1995; Kelton and Yang, 2008; Chen and Jaggi, 2000; Nagar et al., 2003; Mangena and Pike, 2005; Huafang and Jianguo, 2007; Donnelly and Mulcahy, 2008; Samaha et al., 2012; Arafa, 2012; Nekhili et al., 2016). The statistical findings of the current study provide no evidence for the significant influence of director ownership on CIR total. Hence, H 3.2 is rejected.

In terms of institutional ownership, the same negative and insignificant results are found where institutional ownership seems to have no explanatory power over CIR total in Saudi listed companies. A possible justification for this insignificant relationship is proposed by Ruiz-Mallorquí and Santana-Martín (2011), who state that institutional owners may focus on short-term investments, which results in less incentive to affect the level of disclosure. Xiao et al. (2004) also suggest that institutional ownership influence does not exceed the boundaries of mandatory disclosure requirements. Therefore, larger shareholding by institutional owners has no effect on motivating voluntary online disclosure. In addition, it is argued that institutional investors have internal access to the required information through their appointed representatives on the board; hence, disclosing more information on the company's website is worthless (Abdel-Fattah, 2008). These findings are consistent with those of Haniffa (1999), Haniffa and Cooke (2002), Celik et al. (2006), Huafang and Jianguo (2007), Abdel-Fattah (2008) and Arafa (2012). Accordingly, as the results of both the bivariate and multivariate analyses suggest no association between institutional ownership and CIR total in Saudi listed companies, hypothesis 3.3 is rejected.

In summary, it is found that all ownership structure variables have no significant relationship with CIR total and no direct impact on the online disclosure practices exercised by Saudi listed companies. This leads to the rejection of H3, which proposed that there is a significant relationship between ownership structure variables and CIR total by Saudi listed companies, and answering the fifth sub-question Q2.5. Table 6-20 presents the hypotheses and results of the ownership structure variables.

Table   6-20: A summary of the hypotheses and findings of Ownership structure variables

Ownership structure variables	Hypothesis No.	Expected sign	Finding sign	Finding significance	Hypothesis status
Block holder ownership	3.1	+/-	+	Insignificant	Rejected
Director ownership	3.2	+/-	-	Insignificant	Rejected
Institutional ownership	3.3	+/-	-	Insignificant	Rejected
Government ownership	3.4	+/-	-	Insignificant	Rejected

6.6.2.3 Audit committee

Three variables related to audit committee have been examined in this study to investigate their impact on CIR total in Saudi listed companies. Mixed results have been found in the statistical analyses of audit committee variables. While the bivariate analysis indicates a significant relationship for two variables, only one variable is found significant in the multivariate analysis. The findings of both the bivariate and multivariate analyses are presented in Table 6-21.

Table   6-21: A summary of the findings of audit committee variables

Audit committee variables	Bivariate analysis		Full regression			Reduced Regression		
	1	2	3	4	5	6	7	8
Audit committee size	+***	+***	-	-	-			
Audit committee frequency of meeting	-	-	-	-	-			
Audit committee independence	-***	-***	-***	-**	-***	-***	-***	-**

The results of the bivariate and multivariate analyses show disagreement in both the significance and the direction of the relationship between audit committee size and CIR total. While audit committee size is found to be a positively significant variable in the bivariate analysis at the 1% level of significance, multivariate analysis, on the other hand, shows that it has a negative but insignificant relationship with CIR total. This suggests that the size of the audit committee is not an influential factor in motivating internet-based disclosure in the Saudi context. It is possible that this negative association indicates that an audit committee with a large size can suffer from poor communication, coordinating problems and slow decision-making, which result in a less efficient impact on disclosure (see: Felo et al., 2003; Bédard and Gendron, 2010b; and Kent and Stewart, 2008). Small-sized committees, on the other hand, are more likely to have effective monitoring and coordinating and can focus on their

responsibilities (Felo et al., 2003). Moreover, Kent and Stewart (2008) claim that small-sized audit committees are also expected to have greater reliance on the external auditors, which can substitute the influence of audit committee size on the corporate disclosure practice. In addition, Saudi listed companies, adhering the compulsory article of SCGC (no.14), which mandates that the audit committee should consist of at least three members, have almost committed to this minimum size (the mean is 3.36, see Table 6-1), which possibly reduces the effect of audit committee size on CIR. This suggests that audit committee quality is more effective than its size in providing more corporate disclosure (Akhtaruddin et al., 2009). This finding is similar to the results of many prior studies, such as Felo et al., 2003, Magena and Pike, 2005; Akhtaruddin et al., 2009; Bédard and Gendron, 2010b; Katmun, 2012; and Ahmed, 2015. Based on the statistical results of the multivariate analyses, H. 4.1 on the significant association between audit committee size and CIR total is not supported, and is therefore rejected.

Regarding audit committee frequency of meeting, identical results are found from the bivariate and multivariate analyses. The statistical results reveal the same insignificant and negative relationship between audit committee frequency of meeting and CIR total indicating that this variable does not have any impact on the level of internet reporting in the Saudi context. It is proposed in the literature that more frequent meetings are, to some extent, related to effective monitoring, which may result in high-quality transparent disclosure. However, it is not necessarily the case that the high number of meetings will lead to an effective disclosure, as it may be a sign of lack of efficiency (Bédard and Gendron, 2010b). For example, meeting more frequently may be needed to discuss issues arising from the required disclosure of internal control difficulties or to approve a large number of non-audit services (ibid). Bédard and Gendron (2010b) report that 32% of their reviewed studies found a positive relationship between audit committee frequency of meeting and corporate disclosure, 3% found a negative relationship, while the remaining (66%) found no significant relationship. However, the empirical findings of the current study are consistent with many previous studies (e.g. Felo et al., 2003; Karamanou and Vafeas, 2005; Baxter and Cotter, 2009; Bédard and Gendron, 2010b; Ahmed 2015). Since no empirical evidence is found to support the significant influence of audit committee frequency of meeting on CIR total of Saudi listed companies, hypothesis 4.2 is rejected.

With respect to audit committee independence, the findings of the bivariate analysis are nearly similar to those of the multivariate analysis. The percentage of independent members in the

audit committee is the only audit committee characteristic that has an explanatory power over CIR total at the 1% level of significance (at the 5% level in the full log transformation model and reduced bootstrap model). The result implies that the extent of total voluntary internet disclosure decreases with the higher percentage of independent members in the audit committee. Interestingly, this negative association is in contrast to the findings of most of the previous studies (Xie et al., 2003; Karamanou and Vafeas, 2005; Bédard and Gendron, 2010b; Nelson et al., 2010; Katmun, 2012; Ahmed, 2015; Samaha et al., 2015 and Nekhili et al., 2016). Many possible reasons for this negative result are suggested. One suggested justification is that the concept of audit committee independence is in its initial stages in developing countries which have recently implemented corporate governance practices, which may cause such a negative relationship (Mahadeo et al., 2012). Another reason is related to the fact that the independent members themselves may either have limited time for active participation in the committee or have previous experiences in very different industry sectors, which could negatively influence corporate disclosure (Bathala and Rao, 1995; Jiraporn et al., 2009). Furthermore, the independence of the audit committee may be a debatable issue in developing countries, as the appointment of the independent members is affected by political connections and informal social relations, which dominate, to a large extent, the Saudi business environment (Haniffa and Hudaib, 2007; Hussainey and Al-Nodel, 2008; Albassam, 2014). Finally, it is proposed that independent members in the audit committee may play a substitute-monitoring role regarding voluntary disclosure (Eng and Mak, 2003). That is, the increased percentage of independent members in the audit committee reduces the need for voluntary disclosure. This substitute association between audit committee independence and voluntary disclosure may lead to such a negative relationship. In Saudi listed companies, there is a great independence of audit committees[12] (88% have more than 50% independent members and 41% of them have 100% independent members), which is consistent with the notion of substitution. However, some studies find the same negative relationship, albeit insignificant (e.g. Felo et al., 2003; Kent and Stewart, 2008). This study provides evidence that audit committee independence has a significant influence on CIR total. Therefore, hypothesis H 4.3 is supported.

In light of the abovementioned discussions, it can be concluded that audit committee variables have a little effect on disclosing more voluntary information on the Saudi listed companies'

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[12] Also, Saudi companies comply with the mandatory article 14 of SCGC, which affirms that executive board members should not be included in the audit committee.

websites. The result of the current study indicates some support for H4, which postulated a significant relationship between corporate governance variables and CIR total by Saudi listed companies, and answers the seventh sub-question Q 2.7. A summary of the hypotheses and results of audit committee variables is illustrated in Table 6-22.

Table   6-22: A summary of the hypotheses and findings of audit committee variables

Audit committee variables	Hypothesis No.	Expected sign	Finding sign	Finding significance	Hypothesis status
Audit committee size	4.1	+/-	-	Insignificant	Rejected
Audit committee frequency of meeting	4.2	+/-	-	Insignificant	Rejected
Audit committee independence	4.3	+/-	-	Significant at 1% level	Accepted

6.7 Summary

This chapter aims to determine the significant factors that affect CIR practice by Saudi listed companies. It discusses the empirical findings of the association between CIR and the explanatory variables. The chapter starts with the descriptive statistics for the independent variables, after which two types of analyses, bivariate and multivariate, are conducted to determine the significance of their relationships with CIR total. Regarding the bivariate analysis, both parametric and non-parametric tests are used to ensure that the same inferences are reached. Pearson's correlation as a parametric test and Spearman's correlation as a non-parametric test are used for the continuous variables, whereas T-test as a parametric test and Mann Whitney test as a non-parametric test are used for the dummy variables. The multivariate analysis is based on the multiple regression analyses. By examining the assumptions of the OLS model, it has been found that the normality assumption is violated. Thus, the log transformation model has been performed in addition to the un-transformation model, while the bootstrapping model is performed as a robustness check for the results and the reduced model as a supplemental analysis. The findings show that a number of firm characteristics are significantly affecting CIR total, namely firm size, liquidity and dividends. That is, large size companies, which have low liquidity ratio and give out dividends are more likely to increase the level of internet reporting. However, board characteristics variables reveal a weak association with CIR total whereby only board frequency of meeting barely has a significant relationship. It was found that less frequent board meetings may enhance the level of internet reporting. On the other hand, all the ownership structure variables have no direct influence on CIR total, while of the three audit committee variables, committee independence is the only significant variable at the 1% level. This result implies that the extent of total internet reporting decreases with the higher percentage of independent members in the audit committee. By highlighting the relationship between CIR total and the explanatory variables, this chapter

answers the second research question and its sub-questions. The next chapter discusses the empirical findings that analyse the relationship between each of the CIR components and the explanatory variables for a clearer picture of CIR practice.

CHAPTER 7
EMPIRICAL FINDINGS: CORPORATE INTERNET REPORTING COMPONENTS

7.1 Introduction

In this chapter, the association between the independent variables and the main components of CIR will be examined. The aim is to provide a more in-depth understanding of the determinants of internet reporting practice in Saudi listed companies. It is also intended to answer the second question of this study concerning the relationship between the CIR components and the independent variables. The first section, 7.2, represents the findings of the bivariate analysis, whereby both parametric and non-parametric tests are provided. Next, section 7.3 demonstrates the multivariate analysis that investigates the relationship between the components of CIR and the independent variables using the un-transformation, log transformation, and bootstrap models. The results obtained from the regression models for all CIR components are discussed in detail in this section as well. Finally, a summary for this chapter is given in the last section, 7.4.

7.2 Bivariate analysis

Pearson's correlation coefficient as a parametric test and Spearman's correlation coefficient as a non-parametric test were performed to test the individual relationships between components of CIR and the independent continuous variables. The results of these tests are summarised in appendix 15.

Most of the continuous variables are significantly correlated with all the components of CIR according to the results of Pearson and Spearman tests. However, some variables reveal an insignificant correlation in both tests, namely firm growth, board frequency of meeting, director ownership, institutional ownership and audit frequency of meeting. Both the Spearman and Pearson correlation coefficients state that firm size is correlated with all CIR

groups at the 1% level of significance, while leverage is significantly correlated at different levels with all CIR components, except for timeliness, where the correlation is insignificant in both tests. Moreover, the Pearson coefficients demonstrate that liquidity is significantly correlated with content, presentation, and usability of CIR at the 1% level of significance and

with timeliness and audit at the 5% level. In contrast, the Spearman coefficients indicate an insignificant correlation between liquidity and all CIR components. Furthermore, firm growth is the only firm characteristic continuous variable that is insignificantly correlated with all CIR components in both correlation tests. Regarding board of directors variables, it can be noted that companies with large boards tend to disclose more information of all types on their website at the 1% level of significance in both the Pearson and Spearman tests. Similarly, board independence shows the same significant correlation with all CIR components but at different levels of significance in the Pearson and Spearman tests. In contrast, board frequency of meeting is insignificantly correlated with all CIR components in both tests. Both block holder and government ownership are significantly correlated with CIR components, but at different levels. While block holder ownership correlates only with content, timeliness and usability at the 5% level of significance in the Pearson test, it is correlated with all CIR components in the Spearman test at the 1% level (content), the 5% level (timeliness, usability and audit) and the 10% level (presentation). On the other hand, government ownership is correlated at the 1% level of significance with all types of CIR except audit in the Pearson test, which shows an insignificant correlation. However, both correlation tests reveal that director ownership and institutional ownership are insignificantly correlated with the entire components of CIR, with only one exception regarding institutional ownership, which is correlated with audit at the 5% level of significance in the Spearman correlation test only. With respect to audit committee variables, companies with large audit committees are more interested in disclosing all types of information at the 1% level of significance in both the Pearson and Spearman tests. Similarly, audit committee independence shows a significant correlation at the same level (1%) with all CIR components in both correlation tests, with the exception of timeliness in the Pearson test (correlated at the 5% level). According to both the Pearson and Spearman tests, audit frequency of meeting is the only audit committee variable that is insignificantly correlated with all CIR components.

To examine the relationship between all CIR components and categorical variables, both a parametric test (T-test) and a non-parametric test (Mann-Whitney test) were performed. The tables 7-1 and 7-2 illustrate the findings of these two tests, which are identical to a large extent in both tests.

Regarding role duality, no considerable difference was found in the mean and mean rank between companies that separate the roles of CEOs and chairmen and those which have a dual role. Both the T-test and the Mann Whitney test indicate that role duality has an insignificant correlation with all CIR components. Considering firm characteristics variables, only industry

type is insignificantly correlated with all types of CIR in both the T-test and Mann Whitney test, while audit type and dividends are significantly correlated with all CIR components in both tests. The significance level for the correlation between audit type and CIR components is 1% in both tests except for presentation and audit in the T-test, which is 5%. Similarly, both tests show that the dividends variable is significantly correlated at the 1% level of significance with all components of CIR but at the 5% level for audit in the Mann Whitney test.

Table 7-1: Mann-Whitney test for the correlation between CIR components and categorical variables

Mann-Whitney test	content		presentation		timeliness		usability		audit	
	Mean rank	Z value	Mean rank	Z value	Mean rank	Z value	Mean rank	Z value	Mean rank	Z value
Role duality		1.077		-.760		.498		.756		.188
0	84.48		86.21		85.03		84.79		85.33	
1	101.75		74.10		93.00		96.90		88.25	
Audit type		3.764***		2.908***		3.803***		3.729***		3.203***
0	58.11		64.46		57.90		58.39		62.85	
1	92.86		91.15		92.91		92.78		91.59	
Dividends		4.045***		4.263***		4.604***		3.024***		2.537**
0	70.25		69.51		68.18		74.11		76.20	
1	100.75		101.49		102.82		96.89		94.80	
Industry type		.136		.011		-.567		.929		.096
0	85.11		85.47		87.14		82.81		85.23	
1	86.17		85.56		82.72		90.06		85.96	

Table 7-2: T-test for the correlation between CIR components and categorical variables

T- test	content		presentation		timeliness		usability		audit	
	Mean	T value	Mean	T value	Mean	T value	Mean	T value	Mean	T value
Role duality		.750		-.663		.440		.833		.324
0	.55188		.44784		.42708		.54769		.47210	
1	.60143		.42308		.45556		.57222		.50000	
Audit type		3.081***		2.288**		4.272***		4.142***		2.061**
0	.45873		.39850		.31790		.48302		.39385	
1	.58060		.45924		.45854		.56689		.49520	
Dividends		3.895***		4.293***		4.901***		3.057***		2.930***
0	.49731		.40452		.36078		.52484		.41765	
1	.61227		.48824		.49673		.57342		.52983	
Industry type		.049		-.320		-.532		1.354		.117
0	.55421		.44896		.43458		.54084		.47196	
1	.55578		.44200		.41887		.56320		.47676	

The above-discussed findings of bivariate analysis suggest that there is a significant relationship between independent variables and all the components of CIR, although at different levels of significance. To investigate these relationships simultaneously, a multivariate analysis is conducted for each CIR components. The following section discusses the results of this analysis in details.

7.3 Multivariate analysis for CIR components

To examine the relationship between the independent variables and each category of CIR, three multivariate analyses will be applied; these are: the un-transformation, log transformation, and bootstrap models. The results of these models are presented in Tables 7-3, 7-4 and 7-5. In

addition, the supplemental analysis results, that is, the findings of reduced regression models, are presented as well in Tables 7-6, 7-7, 7-8.

Table   7-3: Un-transformation model for CIR components

Variables	content	presentation	timeliness	usability	audit
	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)
Constant	(-1.06)	(-.43)	(-1.72)*	(1.52)	(-.83)
Firm size	.52(5.04)***	.50(4.97)***	.53(5.22)***	.47(4.72)***	.45(4.08)***
Firm growth	.02(.22)	-.002(-.03)	-.01(-.17)	.03(.41)	-.06(-.84)
Leverage	.03(.25)	.06(.64)	-.10(-1.05)	.08(.83)	.03(.27)
Liquidity	.10(1.35)	.08(1.06)	.06(.85)	.09(1.14)	.08(1.03)
Dividends	.12(1.32)	.14(1.68)*	.20(2.28)**	.08(.98)	.06(.68)
Industry type	.03(.33)	.01(.09)	.06(.71)	.09(1.12)	.06(.62)
Audit type	.10(1.26)	.03(.37)	.19(2.47)**	.15(2.01)**	.05(.56)
Board size	.06(.74)	.11(1.41)	-.01(-.15)	.03(.44)	.08(.96)
Board independence	.05(.58)	-.003(-.03)	-.09(-1.04)	.01(.09)	.05(.62)
Board frequency of meeting	-.13(-1.60)	-.129(-1.66)*	-.11(-1.38)	-.13(-1.72)*	-.07(-.84)
Role duality	.08(1.18)	-.026(-.37)	.05(.70)	.09(1.30)	.07(.90)
Block holder ownership	.04(.25)	.09(.67)	-.001(-.01)	.07(.51)	-.02(-.13)
Director ownership	-.01(-.12)	-.09(-1.14)	-.03(-.42)	-.03(-.43)	-.02(-.20)
Institutional ownership	-.02(-.14)	-.16(-1.24)	.004(.03)	-.14(-1.09)	.03(.23)
Government ownership	-.13(-1.15)	-.15(-1.34)	-.12(-1.06)	-.04(-.33)	-.12(-1.002)
Audit com. size	-.03(-.36)	-.01(-.18)	-.03(-.30)	.05(.61)	-.09(-.97)
Audit frequency of meeting	.01(.13)	-.02(-.31)	.001(.01)	-.03(-.38)	-.04(-.51)
Audit committee independence	-.20(-2.73)***	-.14(-1.95)*	-.02(-.24)	-.11(-1.55)	-.26(-3.30)***
Adjusted R^2	.324	.345	.337	.366	.228
F	5.295	5.718	5.540	6.156	3.634
sig	.000	.000	.000	.000	.000

Table   7-4: Log transformation model for CIR components

Variables	content	presentation	timeliness	usability	audit
	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)
Constant	(-1.16)	(-.52)	(-1.42)	(1.49)	(-.97)
Firm size	.52(5.14)***	.5(4.95)***	.53(5.21)***	.47(4.76)***	.46(4.17)***
Firm growth	.09(1.35)	.04(.63)	.03(.41)	.03(.43)	.10(1.35)
Leverage	.04(.40)	.09(.88)	-.07(-.75)	.08(.81)	.06(.59)
Liquidity	.10(1.30)	.09(1.12)	.07(.96)	.08(1.10)	.08(1.01)
Dividends	.12(1.36)	.14(1.61)	.19(2.22)**	.08(.95)	.08(.91)
Industry type	.02(.21)	-.02(-.18)	.04(.44)	.09(1.15)	.04(.42)
Audit type	.09(1.21)	.02(.30)	.17(2.20)**	.15(2.04)**	.03(.41)
Board size	.06(.79)	.12(1.52)	.01(.09)	.04(.46)	.08(.92)
Board independence	.04(.53)	-.01(-.17)	-.09(-1.07)	.01(.07)	.06(.66)
Board frequency of meeting	-.14(-1.76)*	-.13(-1.59)	-.11(-1.43)	-.14(-1.80)*	-.08(-.96)
Role duality	.09(1.27)	-.02(-.30)	.05(.78)	.09(1.37)	.07(.89)
Block holder ownership	.02(.17)	.1(.70)	.01(.07)	.06(.46)	-.03(-.18)
Director ownership	-.01(-.09)	-.11(-1.35)	-.04(-.44)	-.03(-.41)	-.01(-.06)
Institutional ownership	-.03(-.21)	-.18(-1.38)	-.01(-.08)	-.14(-1.08)	.02(.11)
Government ownership	-.14(-1.21)	-.18(-1.64)	-.13(-1.13)	-.04(-.32)	-.12(-1.02)
Audit com. size	-.02(-.29)	.00(-.01)	-.03(-.31)	.05(.59)	-.07(-.84)
Audit frequency of meeting	.01(.09)	-.05(-.65)	-.03(-.46)	-.02(-.31)	-.05(-.65)
Audit committee independence	-.20(-2.64)***	-.14(-1.88)*	-.04(-.53)	-.11(-1.51)	-.26(-3.25)***
Adjusted R^2	.331	.347	.341	.366	.234
F	5.424	5.761	5.632	6.158	3.726
sig	.000	.000	.000	.000	.000

Table   7-5: Bootstrapping model for CIR components

Variables	content	presentation	timeliness	usability	audit
	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)
Constant	-.19(-1.06)	-.05(-.43)	-.30(-1.72)*	.14(1.52)	-.20(-.83)
Firm size	.12(5.04)***	.09 (4.97)***	.13(5.22)***	.06(4.72)***	.14(4.08)***
Firm growth	.004(.22)	-.00 (-.03)	-.003(-.17)	.004(.41)	-.02(-.84)
Leverage	.02(.25)	.03(.64)	-.07(-1.05)	.03(.83)	.03(.27)
Liquidity	.01(1.35)	.01(1.06)	.01(.85)	.01(1.14)	.01(1.03)
Dividends	.05(1.32)	.04(1.68)*	.08(2.28)**	.02(.98)	.03(.68)
Industry type	.01(.33)	.002(.09)	.02(.71)	.02(1.12)	.03(.62)
Audit type	.05(1.26)	.01(.37)	.09(2.47)**	.04(2.01)**	.03(.56)
Board size	.008(.74)	.01(1.41)	-.002(-.15)	.002(.44)	.01(.96)
Board independence	.001 (.58)	.00(-.03)	-.001(-1.04)	.000(.09)	.001(.62)
Board frequency of meeting	-.01 (-1.60)	-.01 (-1.66)	-.01(-1.38)	-.01 (-1.72)	-.01(-.84)
Role duality	.07 (1.18)	-.01(-.37)	.04(.70)	.04(1.30)	.07(.90)
Block holder ownership	.00(.25)	.00(.67)	.00(-.01)	.000(.51)	.000(-.13)
Director ownership	.00(-.12)	-.001(-1.14)	.000(-.42)	.000(-.43)	.000(-.20)
Institutional ownership	.00(-.14)	-.001(-1.24)	.000(.03)	-.001(-1.09)	.000(.23)
Government ownership	-.002(-1.15)	-.001(-1.34)	-.001(-1.06)	.000(-.33)	-.002(-1.002)
Audit com. size	-.01(-.36)	-.003(-.18)	-.01(-.30)	.01(.61)	-.03(-.97)
Audit frequency of meeting	.001(.13)	-.001(-.31)	.000(.01)	-.001(-.38)	-.01(-.51)
Audit committee independence	-.002(-2.73)***	-.001(-1.95)*	-.000(-.24)	-.001(-1.55)	-.003(-3.30)***
Adjusted R^2	.324	.345	.337	.366	.228
F	5.295	5.718	5.540	6.156	3.634
sig	.000	.000	.000	.000	.000

Table   7-6: Un- transformation reduced model for CIR components

Variables	content	presentation	timeliness	usability	audit
	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)
Constant	(-.87)	(-.43)	(-2.22)**	(1.78)*	(-1.05)
Firm size	.47(5.52)***	.50(6.00)***	.48(5.61)***	.51(6.21)***	.40(4.33)***
Liquidity	-.11(-1.77)*	-.14(-2.29)**	-.05(-.74)	-.14(-2.24)**	-.09(-1.34)
Dividends	.11(1.66)*	.13(2.05)**	.22(3.25)***	.03(.44)	.06(.84)
Audit type	.09(1.35)	.00(-.002)	.17(2.56)**	.15(2.34)**	.02(.23)
Board size	.10(1.37)	.11(1.53)	.02(.30)	.03(.50)	.12(1.62)
Board frequency of meeting	-.13(-1.88)*	-.14(-2.06)**	-.12(-1.76)*	-.10(-1.56)	-.10(-1.35)
Role duality	.08(1.32)	-.03(- .44)	.06(.86)	.08(1.22)	.05(.69)
Government ownership	-.11(-1.44)	-.09(-1.13)	-.11(-1.44)	.01(.07)	-.15(-1.80)*
Audit committee independence	-.17(-2.69)***	-.14(-2.21)**	-.04(-.61)	-.10(-1.59)	-.22(-3.18)***
Adjusted R^2	.385	.407	.366	.416	.280
F	12.556	13.662	11.654	14.114	8.188
sig	.000	.000	.000	.000	.000

Table   7-7: log transformation reduced model for CIR components

Variables	content	presentation	timeliness	usability	audit
	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)
Constant	(-.90)	(-.56)	(-1.93)*	(1.78)*	(-1.08)
Firm size	.47(5.54)***	.51(6.08)***	.49(5.73)***	.51(6.21)***	.40(4.38)***
Liquidity	-.11(-1.75)*	-.14(-2.20)**	-.06(-.92)	-.14(-2.24)**	-.09(-1.35)
Dividends	.11(1.62)	.12(1.88)*	.21(3.13)***	.03(.44)	.06(.80)
Audit type	.09(1.33)	-.004(-.06)	.15(2.32)**	.15(2.34)**	.02(.26)
Board size	.10(1.36)	.11(1.51)	.03(.43)	.03(.50)	.12(1.58)
Board frequency of meeting	-.13(-1.87)*	-.13(-2.00)**	-.13(-1.95)*	-.10(-1.56)	-.10(-1.35)
Role duality	.08(1.32)	-.02(-.38)	.06(.92)	.08(1.22)	.05(.70)
Government ownership	-.12(-1.54)	-.12(-1.55)	-.13(-1.62)	.01(.07)	-.15(-1.81)*
Audit committee independence	-.18(-270)***	-.15(-2.27)**	-.07(-1.00)	-.10(-1.59)	-.22(-3.16)***
Adjusted R^2	.383	.398	.374	.416	.281
F	12.470	13.190	12.018	14.114	8.199
sig	.000	.000	.000	.000	.000

201

Table 7-8: Bootstrap reduced model for CIR components

Variables	content	presentation	timeliness	usability	audit
	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)	Coefficients (T value)
Constant	(-.13)	(-.04)	(-.33)**	(.14)*	(-.22)
Firm size	.11(5.52)***	.08(6.00)***	.11(5.61)***	.07(6.21)***	.12(4.33)***
Liquidity	-.002 (-1.77)*	-.002 (-2.29)**	-.001(-.74)	-.001 (-2.24)**	-.002(-1.34)*
Dividends	.04(1.66)	.04 (2.05)*	.08(3.25)***	.01(.44)	.03(.84)
Audit type	.04(1.35)	.00(-.002)	.08(2.56)***	.04 (2.34)**	.01(.23)
Board size	.01(1.37)	.01 (1.53)	.003(.30)	.002(.50)	.02(1.62)
Board frequency of meeting	-.01(-1.88)*	-.01 (-2.06)**	-.01(-1.76)*	-.01(-1.56)	-.01 (-1.35)
Role duality	.07(1.32)	-.02(- .44)	.05(.86)	.03(1.22)	.05(.69)
Government ownership	-.001(-1.44)	-.001(-1.13)	-.001(-1.44)	.00(.07)	-.002 (-1.80)*
Audit committee independence	-.002(-2.69)***	-.001 (-2.21)**	.00(-.61)	.00(-1.59)	-.003(-3.18)***
Adjusted R^2	.385	.407	.366	.416	.280
F	12.556	13.662	11.654	14.114	8.188
sig	.000	.000	.000	.000	.000

- *** Significant at 1%, ** Significant at 5%, * Significant at 10%.

From the above tables, it can be seen that the highest adjusted R^2 was usability in both the full and reduced models (.336 and .416, respectively). However, the lowest adjusted R^2 (.23 and .28, respectively) was for the audit element of CIR. The other categories (presentation, content and timeliness) show an acceptable rate of adjusted R^2 which is close to the adjusted R^2 of usability, ranging from 0.347 to 0.324 in full regression models and from 0.407 to 0.366 in reduced models. A detailed discussion of each independent variables group follows.

7.3.1 Firm characteristics variables

In this section the findings of the association between firm characteristics variables and each category of CIR are presented. Table 7-9 summarises the results of both the bivariate and multivariate analyses.

Table 7-9: The findings of the relationship between firm characteristics variables and CIR components

Variables	content								Presentation							
	Bivariate		Multivariate						Bivariate		Multivariate					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Firm size	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Firm growth																
Leverage	*	**							**	**						
Liquidity	_***				_*	_*	_*		-***					_**	_**	_**
Dividends	***	***				*			***	***	*		*	**	*	*
Industry type																
Audit type	***	***							**	***						

-Note: 1. Pearson Correlation / 2. Spearman's rho / 3. Un-transformation model / 4. Log transformation model / 5. Bootstrap model / 6. Reduced model un-transformation model/ 7. Reduced model log transformation model / 8. Reduced model bootstrap
- *** Significant at 1%, ** Significant at 5%, * Significant at 10%.

Table 7-9: The findings of the relationship between firm characteristics variables and CIR components(Continued)

Variables	Timeliness								Usability							
	Bivariate		Multivariate						Bivariate		Multivariate					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Firm size	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Firm growth																
Leverage									***	***						
Liquidity	-**								-***					-**	-**	-**
Dividends	***	***	**	**	**	***	***	***	***	***						
Industry type																
Audit type	***	***	**	**	**	**	**	***	***	***	**	**	**	**	**	**

Variables	Audit							
	Bivariate		Multivariate					
	1	2	3	4	5	6	7	8
Firm size	***	***	***	***	***	***	***	***
Firm growth								
Leverage	*	**						
Liquidity	-**							-*
Dividends	***	**						
Industry type								
Audit type	**	***						

-Note: 1. Pearson Correlation / 2. Spearman's rho / 3. Un-transformation model / 4. Log transformation model / 5. Bootstrap model / 6. Reduced model un-transformation model/ 7. Reduced model log transformation model / 8. Reduced model bootstrap
- *** Significant at 1%, ** Significant at 5%, * Significant at 10%.

It can be seen from the above tables that firm size is the only variable to have a strong significant association with all CIR components in both the bivariate and multivariate analyses at the 1% level of significance, while firm growth and industry type show no relation to any of the components of CIR. The relationship of the firm characteristics variables with each CIR component individually will be discussed in the following.

7.3.1.1 Content

According to the results of both the bivariate and multivariate analyses, firm size is found to have a positive and significant association with CIR content at the 1% level. In other words, the findings suggest that large companies tend to enrich the content of online disclosed information more than small companies do. This positive relationship between firm size and CIR content can be justified based on agency theory, which proposes that large companies tend to disclose more information to reduce high agency costs and to mitigate the information asymmetry problem. This result finds support in previous research, such as Marston and Polei (2004), Xiao et al. (2004), Al-Motrafi (2008), Kelton and Yang (2008), Aly et al. (2010), Elsayed (2010) and Arafa (2012). Based on the empirical evidence on the significant association between firm size and CIR content, H1.1 regarding CIR content is accepted. Moreover, two variables, namely liquidity and dividends are significantly associated with CIR

content at different levels. While liquidity is significantly associated with CIR content at the 1% level of significance in the bivariate parametric model (Pearson) and at the 10% level in all reduced models, the dividends variable is significantly associated at the 1% level in both the bivariate models and at 10% level in the reduced un-transformed model. Agency theory can explain the relationships between CIR content and both liquidity and dividends. Regarding liquidity, companies with a low liquidity ratio tend to disclose more content information online to satisfy the needs of shareholders and creditors and to assure them that the liquidity problem is being recognized. This finding is similar to that of Wallace et al. (1994). Therefore, H1.4 for CIR content is approved. With respect to dividends, agency theory suggests that companies that pay dividends may consider the provision of more content information to assure about the company's financial ability and its contribution to the society, to attract investors as well as to justify compensation payment. The same result was found in the studies by Archambault and Archambault (2003), Adjaoud and Ben-Amar (2010) and Albassam et al. (2015). Consequently, H1.5 for CIR content is accepted.

Although leverage and audit type were found to be significantly associated with CIR content in the bivariate models at different levels (at the 10% level and the 5% level for leverage and the 1% level for audit type), no support was found in any of the multivariate models. The insignificant relationship between leverage and CIR content is consistent with Debreceny et al. (2002), Oyelere et al. (2003), Eng and Mak (2003), Al-Saeed (2006b) and Aly et al. (2010). While Wallace et al. (1994), Eng and Mak (2003), Xiao et al. (2004), Al-Saeed (2006a) and Aly et al. (2010), supporting the result of the audit type variable. Therefore, H1.3 and H1.7 are rejected.

Similarly, the empirical finding showed that CIR content is insignificantly associated with both firm growth and industry type in all models. The finding of firm growth is supported by Eng and Mak (2003), Ronnie lo (2009) and Albassam (2014), while Eng and Mak (2003), Abdelsalam et al. (2007), Al-Saeed (2006b), Al-Motrafi (2008) and Desoky (2009) found no evidence on a significant relationship between CIR content and industry type. Based on the above results, H1.2 and H1.6 are rejected.

7.3.1.2 Presentation

The relationships between CIR presentation and firm characteristics variables are similar to a large extent to those of CIR content. Firm size again shows a significant association with CIR presentation at the 1% level of significance in all models, indicating that large Saudi companies tend to use more presentation tools on their websites to disseminate information. As cost

benefit theory explains, presenting and publishing information on the website involves facilitating highly cost resources, which large companies are usually able to afford. This finding is in line with Debreceny et al. (2002), Marston and Polei (2004), Xiao et al. (2004), and Kelton and Yang (2008) and Elsayed (2010). Hence, hypothesis H 1.1 regarding CIR presentation is accepted.

Similar to the CIR content results, both liquidity and dividends are significantly associated with CIR presentation, yet at different levels. Liquidity reveals a negative association with CIR presentation at the 1% level of significance in the Pearson test and at the 5% level in the three reduced models. From the agency theory perspective, companies with a low liquidity ratio tend to use different tools of presentation to disclose more information online to meet shareholders' and other users' needs and to show the company's awareness of this issue as part of their accountability to different users. This result is supported by Wallace et al. (1994). Consequently, H1.4 for CIR presentation is accepted. Regarding dividends, the results indicate that there is a positive relationship between CIR presentation and dividends at the 1% level of significance (in the bivariate models), at the 5% level (in reduced un-transformed model) and the 10% level (in the un-transformed, bootstrap, reduced log transformed and reduced bootstrap models). This association can be attributed to signalling theory, which proposes that companies that pay dividends may use different means of presentation to disclose information on their websites to attract investors and signal shareholders' confidence. Archambault and Archambault (2003) and Adjaoud and Ben-Amar (2010) find the same results. Therefore, H 1.5 is approved.

Moreover, the multivariate analysis demonstrates that both leverage and audit type variables are insignificantly associated with CIR presentation. These findings are consistent with Eng and Mak (2003), Al-Saeed (2006b) and Aly et al. (2010). Therefore, H1.3 and H1.7 are rejected. Likewise, no evidence was found to support the significant influence of firm growth or industry type on CIR presentation. These results are supported by Eng and Mak (2003) and Albassam et al. (2015) for firm growth, whereas Eng and Mak (2003), Al-Saeed (2006b) and Desoky (2009) present the same insignificant result for industry type. Hence, hypotheses H1.2 and H1.6 regarding CIR presentation are rejected.

7.3.1.3 Timeliness

The results of the relationship between CIR timeliness and firm characteristics variables seem to fall only into two discrete categories. While three variables, namely firm size, dividends and

audit type, are significantly associated with CIR timeliness in all models, the remaining variables are insignificantly associated in all models. Regarding the firm size variable, again it is significantly associated with CIR timeliness in all models at the 1% level of significance. Presumably the logic for this positive result is that large companies are more likely to be motivated to disclose timely information since they may encounter more pressure from external parties such as investors, governments and the public to report information in a timely manner, which requires allocating more resources in adopting the internet to do so. This result is supported by the studies of Abdelsalam et al. (2007), Abdelsalam and El-Masry (2008), Ezat and El-Masry (2008) and Arafa (2012). Consequently, H 1.1 regarding timeliness is accepted. Furthermore, dividends have been found to have a significant and positive relationship with CIR timeliness in all models at the 1% level of significance (in the bivariate and reduced models) and at the 5% level (in the full regression models). This result can be attributed to signalling theory, which assumes that companies that pay dividends may tend to disclose timely information on their websites to attract investors and signal both the company's financial ability and shareholders' confidence. This result is consistent with Archambault and Archambault (2003) and Adjaoud and Ben-Amar (2010). Therefore, H 1.5 is accepted. Similarly, audit type reveals a positive influence on CIR timeliness in all models at the 1% level of significance in the bivariate and bootstrap reduced models and at the 5% level in the remaining models. A possible justification for this result is that the Big4 companies may influence their clients, ensuring that they disclose timely information on the website since they thus obtain high skills and great experience, while they also seek to protect their reputation. The same positive and significant result was found in Abdel-Fattah (2008), Alshowaiman (2008) and Kelton and Yang (2008). According to this result, H 1.7 is accepted.

Although liquidity has been found to have a significant relationship with CIR timeliness at the 5% level of significance in only one model of bivariate analysis (Pearson), the multivariate analysis shows insignificant association in all models. Moreover, no evidence was found for the significant association of CIR timeliness with firm growth, leverage or industry type in all models. Based on these findings, H 1.2, H 1.3 H1.4 and H 1.6 are rejected.

7.3.1.4 Usability

The CIR usability findings show that three firm characteristics variables are significantly related to CIR usability in both the bivariate and multivariate analyses. While firm size and audit type show a significant association with CIR usability in all models, liquidity is significantly associated in the Pearson test and reduced regression models only. Firm size,

again, reveals a significant and positive association with CIR usability at the 1% level of significance. Due to their significant capacities, large companies are more likely than small companies to invest more resources in developing useful websites which have many tools to ensure the ease of use by large different stakeholders at a low cost. This result is consistent with Bollen et al. (2006), Al-Motrafi (2008), Elsayed (2010), Arafa (2012). Hence, hypothesis 1.1 for CIR usability is accepted.

Regarding audit type, the bivariate analysis reports a significant relationship between CIR usability and audit type at the 1% level of significance. Multivariate analysis confirms this relationship at the 5% level in all models. This implies that companies audited by the Big4 are more associated with CIR usability than other companies, which may be attributed to the notion that the Big4 companies can influence the quality of internet disclosure. Having great experience and a high level of skills means that Big4 audit companies are able to provide assistance to companies to guarantee greater usability of their websites. This result is similar to that of Abdel-Fattah (2008), Kelton and Yang (2008) and Albassam et al. (2015). Therefore, hypothesis 1.7 for CIR usability is accepted.

Moreover, liquidity has been found to have a negative impact on CIR usability in both the bivariate analysis (Pearson) and the multivariate analysis (reduced models) at the 1% and 5% levels of significance, respectively. As agency theory suggests, companies with weak liquidity may tend to satisfy stakeholders' needs and mitigate the liquidity problem by designing a useful website with more usability features which allow quick and easy access to the required information by all users. This negative association was supported by Wallace et al. (1994) and Wallace and Naser (1995). Based on this finding, hypothesis 1.4 for CIR usability is accepted. Two variables, namely leverage and dividends, have been found to be significantly associated with CIR usability in the bivariate analysis at the 1% level of significance. However, these relationships are insignificant for all models in the multivariate analysis. Both variables showed an insignificant relationship in the study of Albassam et al. (2015), while Bollen et al. (2006) report the same association for leverage. In addition, this study fails to find any empirical evidence for a significant relationship of firm growth or industry type with CIR usability. The same insignificant association between CIR usability and these two variables, firm growth and industry type, was reported by Arafa (2012) and Al-Motrafi (2008), respectively. Accordingly, H1.2, H1.3, H1.5 and H1.6 are rejected.

7.3.1.5 Audit

The associations between firm characteristics variables and CIR audit are similar to a large extent to those of CIR content. Only two variables of firm characteristics have revealed a significant association with CIR audit at different levels. Regarding firm size, it appears that large Saudi listed companies disclose more audit items on their websites than small companies do, at significant level of 1% in both the bivariate and multivariate analyses. Both legitimacy and cost benefit theories support this significant association between CIR audit and firm size. Since high quality reports and detailed disclosure via the internet are costly, only large companies can afford them. These companies tend to increase the level of disclosure for certain information, such as audit-related information, so that monitoring costs may be reduced (Gray et al., 1995). In addition, as they more visible to the public, large companies consider disclosing more information, especially audit items, to enhance their public image and reduce government intervention (Debreceny et al., 2002; Oyelere et al., 2003). This result is consistent with many studies, such as Archambault and Archambault (2003), Eng and Mak (2003) Xiao et al. (2004), Al-Motrafi (2008), Alshowaiman (2008), Kelton and Yang (2008), Al-Shammari and Al-Sultan (2010). Therefore, hypothesis H 1.1 for CIR audit is accepted.

Furthermore, liquidity has been found to have a significant association with CIR audit in the bivariate analysis (Pearson) at the 5% level of significance and in the multivariate analysis (reduced bootstrapping model) at the 10% level. This indicates that Saudi listed companies with a low liquidity ratio seem to disclose more detailed audit information on their websites in comparison to companies with a high liquidity ratio. By disclosing more information, these companies try to reassure shareholders and other users while providing the required information. The same negative result was reported by Wallace et al. (1994), Wallace and Naser (1995) and Abdel-Fattah (2008). Hence, hypothesis H1.4 is accepted.

The results of the bivariate analysis show that leverage, dividends and audit type are significantly associated with CIR audit. However, the multivariate analysis reveals these relationships insignificantly. These insignificant relationships were reported by Archambault and Archambault (2003) and Al-Shammari and Al-Sultan (2010) for leverage, Albassam et al. (2015) for dividends, Eng and Mak (2003) for audit type, and Aly et al. (2010) for both leverage and audit type. Therefore, hypotheses H1.3, H1.5 and H1.7 for CIR audit are rejected.

Similar to the results of other CIR components, both firm growth and industry type are found to be insignificantly associated with CIR audit in all models of the bivariate and multivariate analyses. Arafa (2012) finds the same result for firm growth, while Eng and Mak (2003) and

Desoky (2009) report an insignificant association for industry type. Hence, H 1.2 and H 1.6 regarding CIR audit are rejected.

In the light of the above discussion, it can be stated that some of the firm characteristics variables have been shown to be related to the components of CIR which, answers research question 2.2. Accordingly, H1 regarding the significant relationship between firm characteristics and CIR components is accepted. In the next section, the relationship between CIR components and the first group of corporate governance variables, namely the board variables, is discussed in detail.

7.3.2 Board variables

In this group, four variables were examined to determine their association with CIR components. The results are presented in Table 7-10. As it can be seen from the table, board variables show similar relationship with each CIR component; these relations are demonstrated in the following points.

Table   7-10: The findings of the relationship between board variables and CIR components

Variables	Content								Presentation							
	Bivariate		Multivariate						Bivariate		Multivariate					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Board size	***	***							***	***						
Board independence	(**)	(***)							(**)	(***)						
Board frequency of meeting				(*)		(*)	(*)	(*)			(*)			(**)	(**)	(**)
Role duality																

Variables	Timeliness								Usability								Audit							
	Bivariate		Multivariate						Bivariate		Multivariate						Bivariate		Multivariate					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Board size	***	***							***	***							***	***						
Board independence	(***)	(***)							(**)	(**)							(*)	(***)						
Board frequency of meeting						(*)	(*)	(*)			(*)	(*)												
Role duality																								

-Note: 1. Pearson Correlation / 2. Spearman's rho / 3. Un-transformation model / 4. Log transformation model / 5. Bootstrap model / 6. Reduced model un-transformation model/ 7. Reduced model log transformation model / 8. Reduced model bootstrap
-*** Significant at 1%, ** Significant at 5%, * Significant at 10%.

7.3.2.1 Content

The results of the association between CIR content and board variables in the bivariate and multivariate analyses show a noticeable dissimilarity. Only board frequency of meeting shows a negative relationship in the multivariate analysis at a 10% level of significance in the log transformed model and in all reduced models, while the bivariate analysis reveals an insignificant association. This implies that companies with a high frequency of board meetings

are less likely to disclose more content information on their websites. Stewardship theory attributes this negative relationship to the notion that directors are trustworthy, hence more frequent board meetings may not increase the level of content disclosure. More frequent meetings are required only if the company is experiencing difficulties. Moreover, it is argued that more frequent board meetings may result in high agency cost which, in turn, may decrease content disclosure. This negative association was documented by Xie et al. (2003) and Nelson et al. (2010). Therefore, H 2.3 regarding CIR content is accepted.

Again, there is a disagreement among the results of the bivariate and multivariate analyses results regarding the significant association of board size and board independence with CIR content. Concerning board size, while the bivariate analysis reveals a significant relationship at the 1% level of significance, the multivariate analysis shows an insignificant relationship between CIR content and board size. This suggests that board size is not necessarily an influential factor in improving CIR content in Saudi listed companies. This finding is consistent with Al-Motrafi (2008), Kent and Stewart (2008) and Arafa (2012). Similarly, board independence was found to be negatively associated with CIR content at the significance levels of 5% and 1% in the bivariate models, respectively, and no association was found in all the multivariate models. This implies that board independence has no explanatory power over CIR content. Xiao et al. (2004), Kent and Stewart (2008), Elsayed (2010), Al-Shammari and Al-Sultan (2010), Arafa (2012) and Ahmed (2015) report the same insignificant association between CIR content and board independence. Based on these findings, hypotheses H2.1 and H2.2 regarding CIR content are rejected.

With respect to role duality, the current study fails to provide any empirical evidence for the significant association with CIR content in all the bivariate and multivariate models. This result is supported by Abdelsalam and Street (2007), Abdel-Fattah (2008), Al-Motrafi (2008), Elsayed (2010), Kelton and Yang (2008) and Al-Shammari and Al-Sultan (2010), who find that role duality has no influence on CIR content. Consequently, H2.4 regarding CIR content is rejected.

7.3.2.2 Presentation

The same results of the relationship between CIR content and board variables have been noted for CIR presentation. Once again, board frequency of meeting is the only variable that shows a negative and yet significant association with CIR presentation in only the multivariate analysis at the 10% level of significance in the un-transformed model and at the 5% level in all reduced models. That is, more frequent board meetings are not likely to improve CIR

presentation and reducing board frequent meetings may lead to enhanced CIR presentation, which may be attributed to the increasing cost associated with more frequent meetings. This result is consistent with Xie et al. (2003) and Nelson et al. (2010), who state a negative relationship, while Kent and Stewart (2008) and Ahmed (2015) report a significant yet positive relationship. Accordingly, 2.3 regarding CIR presentation is accepted.

Similar to content, only the bivariate analysis shows that both board size and board independence are significantly associated with CIR presentation. While board size is positively associated at the 1% significance level, board independence is negatively associated at the 5% and 1% levels in the Pearson and Spearman tests, respectively. However, the multivariate analysis shows that these associations are insignificant. This implies that neither board size nor board independence have an impact on CIR presentation in the Saudi context. The result is consistent with Elsayed (2010) for board size. Further, Kent and Stewart (2008), Elsayed (2010) and Ahmed (2015) confirm the same insignificant relationship for board independence. Therefore, hypotheses H2.1 and H2.2 are rejected. Moreover, role duality has been found to have no explanatory power over CIR presentation in both the bivariate and multivariate analyses. Kelton and Yang (2008) and Elsayed (2010) report the same insignificant relationship between role duality and CIR presentation. Hence, H 2.4 regarding CIR presentation is rejected.

7.3.2.3 Timeliness

As seen in Table 7-10, the results of the relationship between CIR timeliness and board variables are almost similar to those of CIR content and presentation. Only the multivariate reduced models show that board frequency of meeting is negatively associated with CIR timeliness at the 10% level of significance. This finding indicates that more frequent meetings by the board of directors may lead to the less timely disclosure of information on the companies' websites. To justify this negative relationship, Vafeas (1999) suggests that boards may respond to problems present by meeting more often, thus, boards are more likely to meet less frequently and disclose timely information when corporate performance has improved. This is supported by Xie et al. (2003) and Nelson et al. (2010), who report a negative yet insignificant relationship, whereas Kent and Stewart (2008) and Katmun (2012) find a significant yet positive association. Consequently, H 2.3 regarding CIR timeliness is accepted. Furthermore, both variables of board size and board independence reveal similar results to those of CIR content and presentation. While board size has been found to be positively associated with CIR timeliness at the 1% level of significance in the bivariate analysis only,

board independence has a negative association at 1% level in the bivariate analysis as well. None of these two variables has a significant association with CIR timeliness in the multivariate analysis. The same findings are reported by Kent and Stewart (2008), Elsayed (2010) and Arafa (2012), however, Ahmed (2015) confirms the insignificant association for board independence only. Accordingly, hypotheses H2.1 and H2.2 for CIR timeliness are rejected.

Regarding role duality, as with the results of CIR content and presentation, no evidence was found for the significance of the relationship between CIR timeliness and role duality in either the bivariate or multivariate analyses. This indicates that role duality is not relevant to the effectiveness of timely disclosure practice on the internet by Saudi listed companies. This result is consistent with Abdelsalam and Street (2007), Abdelsalam and El-Masry (2008), Ezat and El-Masry (2008) and Arafa (2012). Therefore, H2.4 regarding CIR timeliness is not supported.

7.3.2.4 Usability

Among the four board variables, again only board frequency of meeting shows a significant relationship with CIR usability at the 1% level of significance in both the un-transformed and log models; however, bivariate analysis shows insignificant association. As such, more frequent meetings of the board of directors may result in a decrease in the usability of the company's website. This finding is consistent with Xie et al. (2003) and Nelson et al. (2010), who report the same negative result; however, they find this relationship to be insignificant. Based on the empirical findings, H2.3 regarding the significant association between board frequency of meeting and the CIR usability of Saudi listed companies is accepted.

In addition, the results of the bivariate and multivariate analyses were conflicted regarding the significance of the association of board size and board independence with CIR usability. While the bivariate analysis reveals that board size has a significant impact on CIR usability at the 1% level of significance and board independence at the 5% level, all multivariate models show that these two variables are insignificant. These results imply that board size and board independence are not influential factors on CIR usability. Al-Motrafi (2008) and Arafa (2012) support the insignificant relationship between CIR usability and board size, whereas Abdelsalam et al. (2007), Elsayed (2010) and Arafa (2012) confirm the board independence result. Hence, hypotheses H2.1 and H2.2 for CIR usability are rejected. In addition, all models of the bivariate and multivariate analysis indicate an insignificant association between role duality and CIR usability. The current study results suggest that the variation in CIR usability of Saudi listed companies cannot be explained by the separation between the CEO and the

chairman, which is in line with the studies by Abdel-Salam et al. (2007), Al-Motrafi (2008), Elsayed (2010) and Arafa (2012) who report an insignificant association between CIR usability and role duality. H2.4 for CIR usability accordingly is thus rejected.

7.3.2.5 Audit

None of the board variables seem to have an influence on disclosing audit items on the websites of Saudi listed companies. The results of the bivariate analysis indicate that board size is significantly associated with CIR audit at the 1% level of significance, board independence at the 10% level (Pearson) and the 1% level (Spearman), and no association was found for board frequency of meeting or role duality with CIR audit. Moreover, all multivariate models show an insignificant relationship between the four board variables and CIR audit. According to these findings, board variables have proven to be not related to CIR audit in the Saudi context. Therefore, hypotheses H2.1, H2.2, H2.3 and H2.4 for the significant association between board variables and CIR audit are not supported.

From the above discussion it can be concluded that only one of board variables, namely board frequency of meeting, is considered to be relevant to the components of CIR except for CIR audit. The other board variables, i.e. board size, board independence and role duality, have no effect on CIR components. Based on these results, H2 regarding the significant relationship between board variables and CIR components is not supported and the answer to research question 2.4 is clarified. The following section demonstrates the association between ownership structure variables, which is the second group of corporate governance variables, and CIR components.

7.3.3 Ownership structure variables

In this study, ownership structure is classified into four variables: block holder ownership, director ownership, institutional ownership and government ownership. The results of the relationship between those owner structure variables and each CIR components are presented in Table 7-11. According to the results, ownership variables show a very weak association with all CIR components, which is discussed in detail.

7.3.3.1 Content

None of the ownership structure variables have been found to have a significant relationship with CIR content. Considering block holder ownership and government ownership, the bivariate analysis indicates a positive relationship between CIR content and both variables at

Table   7-11: The findings of the relationship between Ownership structure variables and CIR components

Ownership variables	Content								Presentation							
	Bivariate		Multivariate						Bivariate		Multivariate					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Block holder	**	***								*						
Director		-	-	-	-				-	-	-	-	-			
Institutional			-	-	-				-	-	-	-	-			
Government	**	***	-	-	-	-	-	-	***	***	-	-	-	-	-	-

Ownership variables	Timeliness								Usability								Audit							
	Bivariate		Multivariate						Bivariate		Multivariate						Bivariate		Multivariate					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Block holder	**	**	-		-				**	**								**	-	-	-			
Director			-	-	-				-	-	-	-	-				-	-	-	-	-			
Institutional					-				-	-	-	-	-					**						
Government	***	***	-	-	-	-	-	-	***	***	-	-	-					***	-	-	-	(*)	(*)	(*)

-Note: 1. Pearson Correlation / 2. Spearman's rho / 3. Un-transformation model / 4. Log transformation model / 5. Bootstrap model / 6. Reduced model un-transformation model/ 7. Reduced model log transformation model / 8. Reduced model bootstrap

-*** Significant at 1%, ** Significant at 5%, * Significant at 10%.

the 5% and 1% levels of significance in the two models, respectively. In contrast, all multivariate models show that block holder ownership and government ownership have an insignificant relationship with CIR content. This positive and insignificant relationship for block holder ownership is supported by Abdel-Fattah (2008), while Abdel-Salam et al. (2007) Arafa (2012) and Ahmed (2015) find a negative and yet insignificant relationship between block holder ownership and CIR content. Furthermore, the same negative and insignificant association between government ownership and CIR content is reported by Al-Motrafi (2008) and Arafa (2012). Abdel-Fattah (2008) and Alshowaiman (2008) also report an insignificant yet positive association between government ownership and CIR content. Moreover, the results of the bivariate and multivariate analyses identically reveal that director ownership and institutional ownership are insignificantly associated with CIR content. The insignificant relationship between CIR content and these two variables may be attributed to the ease of access to the required information that directors have due to their positions and that institutional investors have through their representative members on the board. Kelton and Yang (2008), Arafa (2012) and Ahmed (2015) indicate that director ownership is associated insignificantly with CIR content, whereas Xiao et al. (2004) and Arafa (2012) find no association between institutional ownership and CIR content. The results suggest that CIR content in Saudi listed companies is not affected by ownership structure. Based on these results, hypotheses H3.1, H3.2, H3.3 and H3.4, which relate to the impact of ownership structure on CIR content, are not supported in this study.

7.3.3.2 Presentation

Two ownership variables, block holder ownership and government ownership, show a significant relationship with CIR presentation in the bivariate analysis only at the significance levels of 10% and 1%, respectively. However, all multivariate models reveal that these relationships are insignificant. Block holder ownership is the only ownership variable that has a positive relationship with CIR presentation in all models. The insignificant result of block holder ownership is consistent with Elsayed (2010) and Ahmed (2015), who find that the percentage of shareholders who own 5% or more is not related to CIR presentation.

In addition, the bivariate and multivariate analyses provide contradictory results regarding government ownership regarding both significance and direction. While the bivariate analysis shows a positive relationship at the 1% level of significance, the multivariate models reveal a negative and insignificant relationship with CIR presentation. The cost benefit theory suggests that as long as government shareholders can acquire the required information internally, there is no need to bear any additional costs resulting from using presentation tools in online disclosure. This result is consistent with Xiao et al. (2004) and Alshowaiman (2008), who report an insignificant relationship between government ownership and CIR presentation.

Furthermore, it is notable that both the bivariate and multivariate analyses reveal identical results regarding the direction and the significance of the association between CIR presentation and both director and institutional ownership. Concerning director ownership, all statistical models show a negative and insignificant relationship with CIR presentation, which is supported by Kelton and Yang (2008) and Elsayed (2010). Similarly, institutional ownership has the same negative and insignificant association with CIR presentation, which is confirmed by Xiao et al. (2004). In summary, it was found that all ownership structure variables have no significant or direct influence on the CIR presentation exercised by Saudi companies. Consequently, hypotheses H3.1, H3.2, H3.3 and H3.4 regarding the significant relationship between ownership variables and CIR presentation are rejected in the current study.

7.3.3.3 Timeliness

Similar to CIR content and presentation, all ownership variables are insignificantly associated with CIR timeliness. With respect to block holder ownership, while the bivariate analysis shows a significant association with CIR timeliness at the 5% level of significance, the multivariate finds this association to be insignificant. Similarly, government ownership also has an insignificant impact on CIR timeliness in only the multivariate analysis, whereas the

bivariate analysis reveals a significant relationship with CIR timeliness at the 1% level. Regarding director and institutional ownership, the findings of both the bivariate and multivariate analyses fail to provide any empirical evidence on the significant relationship between CIR timeliness and director ownership or institutional ownership. This implies that the structure of ownership is not an important factor affecting the timeliness of internet reporting in Saudi listed companies. However, the negative associations indicate that companies that are owned by more concentrated owners, government, directors or institutions, are more expected to disclose less timely information in their websites. The insignificant association between ownership variables and CIR timeliness finds support in previous research. While Abdelsalam and Street (2007), Elsayed (2010) and Arafa (2012) report that ownership concentration has no impact on CIR timeliness, Elsayed (2010) and Arafa (2012) report the same relationship regarding director ownership. Likewise, Arafa (2012) provides evidence that institutional ownership and government ownership do not affect the decision regarding the timeliness of CIR. Therefore, hypotheses H3.1, H3.2, H3.3 and H3.4 regarding the significant influence of ownership variables on CIR timeliness are rejected.

7.3.3.4 Usability

As with all the previous components of CIR, block holder ownership has been found to have no explanatory power over CIR usability in the Saudi context. Although the bivariate analysis demonstrates a positive and significant relationship between block holder ownership and CIR usability at the 5% level of significance, the multivariate analysis finds this association to be insignificant. This result is in line with Abdelsalam et al. (2007), Elsayed (2010) and Arafa (2012), who state that the percentage of shareholders who own 5% or more does not affect CIR usability. Further, government ownership is insignificantly associated with CIR usability in the multivariate analysis only. However, the results of the bivariate models show a significant association at the 1% level of significance. This is supported by Al-Motrafi (2008) and Arafa (2012), who report the same negative and insignificant impact for government ownership on CIR usability in Saudi and Egyptian companies, respectively.

Regarding director ownership, the results of all the statistical methods indicate a negative and insignificant association with CIR usability. Eng and Mak's (2003) study states that, in the case of small and emerging markets, director ownership has a negative and significant association with the level of voluntary disclosure. That is, when director ownership is low, the need for monitoring may increase in order to mitigate the agency problem. The cost of monitoring can be reduced by increasing the disclosure level as a substitute for monitoring (Eng and Mak,

2003), which justifies the negative association. In line with this study's result, Arafa (2012) reports an insignificant relationship between director ownership and CIR usability. Moreover, institutional ownership is negatively insignificantly associated with CIR usability in both the bivariate and multivariate analyses. The negative relationship indicates that companies with a low percentage of institutional ownership are more likely to provide more usable websites. Companies with a high percentage of institutional ownership are expected to have a large proportion of representative members in the board of directors, which means a flexible and well-eased accessibility to the required information without the need to use the website, thus, the usability of the website will be lower. The current study's result is consistent with Elsayed (2010) and Arafa (2012), who find that institutional ownership is insignificantly associated with CIR usability. Based in the above findings, the current study fails to find evidence for the effect of ownership variables on CIR usability; consequently, hypotheses H3.1, H3.2, H3.3 and H3.4 related to the impact of ownership variables on CIR usability are rejected.

7.3.3.5 Audit

In contrast to the other CIR components, government ownership has a significant relationship with CIR audit. The reduced multivariate models show a negative association at the 10% level of significance, while the Spearman model reveals a positive relationship at the 1% level. This implies that Saudi listed companies with a high percentage of government ownership tend to disclose less audit items on their websites. A possible explanation for the negative association is that governmental shareholders can obtain the required audit information internally as they have easy access to such information; hence, there is no need to burden the companies with a detailed disclosure on the websites. This result agrees with Alshowaiman (2008), who reports a significant association between CIR audit and government ownership in Saudi listed companies, and Xiao et al. (2004), who finds government ownership associated negatively and significantly with online disclosure and its components. As the finding proves that disclosing audit items on the website is affected by government ownership, this leads to the acceptance of hypothesis H3.4, which is related to the significant relationship between government ownership and CIR audit.

With regard to block holder ownership, only one bivariate model, namely the Spearman model, reveals a significant relationship between CIR audit and block holder ownership at the 5% level of significance. This association is found to be insignificant in the Pearson model and in all other multivariate models. Thus, it can be stated that concentrated ownership structure has no

influence on CIR audit in the Saudi context. Further, Abdelsalam et al. (2007) and Abdel-Fattah (2008) also document this insignificant association of block holder ownership.

Similarly, institutional ownership was found to have a significant association with only the Spearman model at the 5% level of significance, while all the other models show an insignificant relationship with CIR audit. Again, the result of this study indicates that the percentage of shares held by institutional owners does not affect the online disclosure of audit items by Saudi listed companies. Abdel-Fattah (2008) confirms this insignificant association in Egyptian listed companies, which may be due to the availability of required information that institutional investors obtain by using their representatives on the board of directors. In addition, no evidence was found in either the bivariate or multivariate analysis for a significant relationship between director ownership and CIR audit. This result is consistent with Abdelsalam et al. (2007), who find that director ownership is negatively and insignificantly associated with CIR credibility. Therefore, hypotheses H3.1, H3.2 and H3.3, which proposed block holder ownership, director ownership and institutional ownership are related significantly to CIR audit, are not supported.

Based on the above results, it can be concluded that the current study finds no support for the proposition that ownership variables have a significant effect on CIR components in Saudi listed companies, except for the significant association between government ownership and CIR audit, which help in answering the sixth sub-question Q2.6. Therefore, H3 regarding the significant relationship between ownership variables and CIR components is rejected. The relationship between audit committee variables, the third group of corporate governance variables, and CIR components is discussed in the next section.

7.3.4 Audit committee variables

Three audit committee variables are examined to explore their association with the components of CIR. The findings of both the bivariate and multivariate analyses are presented in Table 7-12. Noticeably, the audit committee variables show, to some extent, similar results for each CIR component. The next points illustrate these relationships in more detail.

7.3.4.1 Content

Audit committee independence is the only variable of this group which shows a strong significant association with CIR content at the 1% level of significance in all the statistical models of the bivariate and multivariate analyses. However, the negative association implies

Table   7-12: The findings of the relationship between audit committee variables and CIR components

Audit committee variables	Content								Presentation							
	Bivariate		Multivariate						Bivariate		Multivariate					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Audit committee size	***	***	-	-	-				***	***	-	-	-			
Audit frequency of meeting	-								-	-	-	-	-			
Audit committee independence	-***	-***	-***	-***	-***	-***	-***	-***	-***	-***	-*	-*	-*	-**	-**	-**

Audit committee variables	Timeliness								Usability								Audit							
	Bivariate		Multivariate						Bivariate		Multivariate						Bivariate		Multivariate					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Audit committee size	***	***	-	-	-				***	***							***	***	-	-	-			
Audit frequency of meeting	-	-		-						-	-	-	-				-	-	-	-	-			
Audit committee independence	-**	-***	-	-	-	-	-	-	-***	-***	-	-	-	-	-	-	-***	-***	-***	-***	-***	-***	-***	-***

-Note: 1. Pearson Correlation / 2. Spearman's rho / 3. Un-transformation model / 4. Log transformation model / 5. Bootstrap model / 6.
   Reduced model un-transformation model/ 7. Reduced model log transformation model / 8. Reduced model bootstrap
-*** Significant at 1%, ** Significant at 5%, * Significant at 10%.

that Saudi listed companies with a high percentage of independent members in the audit committee are more likely to disclose less content in their websites. This relationship may be due to the proposed substitution association between CIR content and audit committee independence, where independent members in the audit committee are perceived as monitors, which decreases the need for more online content disclosure. Felo et al. (2003) and Kent and Stewart (2008) report the same negative yet insignificant association, while Ahmed (2015) and Nekhili et al. (2016) find a significant yet positive association. Accordingly, H4.3 regarding CIR content is accepted.

Moreover, only the bivariate analysis shows a significant and positive association between audit committee size and CIR content at the 1% level of significance. In contrast, the multivariate analysis finds this relationship to be negative and insignificant. A possible reason for the insignificant relationship is the lack of variation in audit committee size among Saudi companies. The majority of Saudi companies are committed to the minimum audit committee size required, which is compulsory under Saudi corporate governance code, thus probably reducing the influence of audit committee size on CIR content. Another suggested reason is that audit committees with fewer members are more likely to rely heavily on their external auditor, which implies a substitution effect between audit committee size and external auditor, thus limiting the effect of audit committee size (Kent and Stewart, 2008). This result is consistent with Felo et al. (2003), Akhtaruddin et al. (2009) and Ahmed (2015), who also find

an insignificant relationship between audit committee size and disclosure. Consequently, H4.1 regarding CIR content is rejected.

Regarding audit committee frequency of meeting, the statistical results of both the bivariate and multivariate analyses fail to provide evidence for the impact of frequent meeting of audit committee on CIR content. This result is consistent with Felo et al. (2003) and Ahmed (2015), who find an insignificant association. Although Kelton and Yang (2008) and Kent and Stewart (2008) report the same direction as the current study's result for the US and Australian companies, they find this relationship to be significant. Such a result leads to the rejection of H4.2, which suggests a significant relationship between audit committee frequency of meeting and CIR content in Saudi listed companies.

7.3.4.2 Presentation

It was found that the results of CIR presentation are similar, to a large extent, to those of CIR content. Audit committee independence, again, is associated negatively with CIR presentation at the 1% level of significance in the bivariate analysis, at the 10% level in the multivariate analysis and at the 5% level in the reduced models. This indicates that Saudi listed companies with more independent audit committees are less likely to use internet presentation tools to disclose information on their websites. This may be attributed to the lack of experiences or active participations that the independent members of the audit committee may have, which results in less use of presentation tools for online disclosure. Further, it is possible that the substitution effect of the external auditors (most of the Saudi listed companies are audited by the Big4) encourage independent members to rely more on them and thus they reduce their CIR presentation. Felo et al. (2003) and Kent and Stewart (2008) find that audit committee independence is negatively yet insignificantly associated with disclosure. Based on the statistical findings, H4.3 regarding CIR presentation is accepted.

The results of the bivariate and multivariate analyses regarding the relationship between audit committee size and CIR presentation are contradictory. While the bivariate analysis shows a positive association at the 1% level of significance, the multivariate analysis reveals that the size of the audit committee is negatively and insignificantly associated with CIR presentation. To the best of the researcher's knowledge, there are no previous studies examining the relationship between audit committee size and CIR presentation; however, Felo et al. (2003), Akhtaruddin et al. (2009) and Ahmed (2015) report an insignificant relationship between audit committee size and disclosure. Therefore, hypothesis H4.1, which proposed that audit committee size has a significant association with CIR presentation, is rejected.

With respect to audit committee frequency of meeting, this study reveals an insignificant relationship with CIR presentation in both the bivariate and multivariate analyses. This result indicates that, in the Saudi context, the frequent meeting of the audit committee has no impact on using more presentation tools to disclose information on the internet. This result is in contrast to the findings of Kelton and Yang (2008), who find a positive and significant association between audit committee frequency of meeting and CIR presentation. However, Felo et al. (2003) report the same insignificant association with disclosure. Consequently, H4.2 regarding CIR presentation is rejected.

7.3.4.3 Timeliness

None of the three audit committee variables have a significant relationship with CIR timeliness. However, audit committee size and audit committee independence have a similar significance level, yet a different direction. Both variables are significantly associated with CIR timeliness at the 1% level in the bivariate analysis (5% level for independence in Pearson model only), while the multivariate analysis shows insignificant relationships. With respect to the association direction, audit committee size was found to have a positive association in the bivariate analysis but a negative one in the multivariate analysis, whereas, audit committee independence is negatively associated in both analyses. Likewise, no evidence was found for any significant association between CIR timeliness and audit frequency of meeting in both the bivariate and multivariate analyses. That is, audit committee variables have no significant or direct influence on the timeliness of CIR practices exercised by Saudi companies. To the best of the researcher's knowledge, the relationship between audit committee variables and CIR timeliness has not previously been examined, although Felo et al. (2003) and Ahmed (2015) find an insignificant relationship between audit committee size, independence and frequency of meeting and disclosure practices. Based on these results, hypotheses H4.1, H4.2 and H4.3 for the significant association between audit committee variables and CIR timeliness are rejected.

7.3.4.4 Usability

The same results of CIR timeliness have been found for CIR usability. Audit committee size has been found to have a positive association with CIR usability in all models; however, this association is significant at the 1% level of significance in the bivariate analysis but is insignificant in the multivariate analysis. Similarly, while the bivariate analysis reveals a significant association between audit committee independence and CIR usability at the 1%

level, the multivariate analysis shows this association to be insignificant. Further, it was found that the independence of the audit committee is negatively associated with CIR usability in both analyses. Again, the result of the current study fails to find any support for a significant relationship between audit frequency of meeting and CIR usability. These findings suggest that the size, independence or frequent meeting of audit committee have no significant impact on disclosing more usable information on the website. Although the insignificant relationship between audit committee variables and disclosure has been documented by many prior studies, such as Felo et al. (2003), Kent and Stewart (2008), Akhtaruddin et al. (2009) and Ahmed (2015), to the researcher's knowledge, no previous study has examined the direct relationship between CIR usability and audit committee variables. Based on the empirical findings, hypotheses H4.1, H4.2 and H4.3 regarding the significant association between audit committee variables and CIR usability are rejected in this study.

7.3.4.5 Audit

As seen from Table 7-12, the audit committee variables present mixed results in both the direction and significance of their relation with CIR audit. Similar to CIR content and presentation, audit committee independence shows a significant and negative relationship with CIR audit at the 1% significance level in all models of the bivariate and multivariate analyses. This indicates that Saudi listed companies that have audit committee with less independent members disclose more audit information on their websites than those companies with more independent members on their audit committees. Again, it seems that this result can be justified in light of the substitute-monitoring role of independent members of the audit committee, who tend to disclose less information to their stakeholders. Ahmed (2015) and Nekhili et al. (2016) find a significant yet positive influence of audit committee independence on disclosure. On the other hand, Felo et al. (2003) and Kent and Stewart (2008) report the same direction of this study's result; however, they find this association to be insignificantly associated with disclosure. Based on the empirical results, hypothesis H4.3 regarding the significant impact of audit committee independence on CIR audit is accepted.

Regarding audit committee size, contradictory results have been found in the bivariate and multivariate analyses. While the bivariate analysis reveals a significant and positive relationship at the 1% level of significance, the multivariate analysis shows an insignificant and negative association with CIR audit. This result implies that the size of the audit committee is not relevant to CIR audit in the Saudi context. To the best of the researcher's knowledge, the

relationship between audit committee size and CIR audit has not been investigated before; however, Felo et al. (2003), Akhtaruddin et al. (2009) and Ahmed (2015) find an insignificant relationship between audit committee size and disclosure. Consequently, hypothesis H4.1 for CIR audit is rejected.

 Moreover, no evidence is found to support the relationship between audit committee frequency of meeting and CIR audit. Both the bivariate and multivariate analysis reveal a negative and insignificant association. Such a result implies that H4.2 regarding the significant impact of audit committee frequency of meeting on CIR audit is not supported and is thus rejected.

In brief, it can be stated that the above findings do not suggest a significant relationship between audit committee variables and CIR components as has been proposed in the Saudi context. Audit committee independence is the only variable found to have a strong significant association with each of CIR content, presentation and audit variables. As such, the current study's results provide limited support for H4, which proposed a significant association between audit committee variables and CIR components by Saudi listed companies, and also answers sub-question Q 2.8.

Presumably, the reason for these non-significant findings, particularly regarding the board and audit committee variables, can be the compliance with the SCGC and its new modifications, which leads to similar practices among Saudi companies. According to Albassam (2014), the compliance of Saudi companies with the SCGC measured by the corporate governance index has improved from 17% in 2004 to reach 73% in 2010, which can be attributed to reforms in corporate governance in Saudi Arabia.

7.4 Summary

This chapter presents the empirical findings of the association between each CIR component and firm characteristic, board of directors, ownership structure and audit committee variables in the Saudi context realising the importance of analysing CIR based on its different components. The relationship between each group of variables and all CIR components has been investigated. The findings reveal slight differences in the significance of these variables among CIR components. While a number of firm characteristics variables can explain the variations in the extent of each of CIR components, none of the other variable groups show a significant association with any of the CIR components, except for board frequency of meeting, government ownership and audit committee independence, whereby these have significant relationships with some of the components of CIR. Particularly, the results reveal that large companies are more likely to achieve high level of all CIR components, while companies with

low liquidity ratio show high level of CIR content, CIR presentation, CIR usability and CIR audit. Moreover, companies which pay dividends have higher level of CIR content, CIR presentation and CIR timeliness, whereas Big4 companies present higher quality CIR timeliness and CIR usability. Furthermore, it was found that reducing board frequent meetings may improve CIR content, CIR presentation, CIR timeliness and CIR usability. In addition, companies with a high percentage of government ownership tend to disclose less audit items online and finally, companies with more independent audit committee disclose less CIR content, CIR presentation and CIR audit items online. A possible justification for the non-significant results, especially regarding board and audit committee variables, is the lack of variation in practice among Saudi listed companies due to the compliance with SCGC requirements. This chapter's findings can help answer the current study's second question and its sub questions. The next chapter discusses the impact of CIR and its components on firm financial performance, which may highlight the importance of studying CIR practice in the Saudi context.

CHAPTER 8
THE IMPACT OF CORPORATE INTERNET REPORTING ON FIRM FINANCIAL PERFORMANCE

8.1 Introduction

The growing use of the internet provides companies with the ability to disseminate information to wide range of users. Potentially, internet technology has the power to develop corporate reporting as a cheap and useful communication means (Jones and Xiao 2004). Using a corporate website to disclose information has a number of great benefits in terms of the amount of information available on the website, the easy access for all investors and the timeliness of the disclosed information (Hurtt et al., 2001). However, disclosing information online requires a high cost to collect, present, publish and maintain such information on the company's website, which companies should take into consideration. Companies are keen to adopt internet disclosure whenever the advantages of using it overweigh the disadvantages, i.e. when the benefits of utilizing online disclosure exceed the costs.

It has been suggested by many researchers that more disclosed information and low information asymmetry result in preferable economic consequences; one of these is an improvement in corporation performance (e.g. Healy and Palepu, 1993; Healy et al., 1999; Hassan et al., 2009; Aly et al., 2010; Schoenfeld, 2017). Based on the capital market perspective, whenever there is an information asymmetry between managers and investors, managers have motivations to provide more voluntary disclosure in order to moderate this problem. By increasing voluntary disclosure, information risk is decreased, hence the cost of capital can be reduced, which leads to an increase in the company's value (Healy and Palepu, 2001). Moreover, it is claimed that increased disclosure affects information asymmetry and thereby stock performance and liquidity. That is, expanded disclosure and the availability of more information on the company's website reduce information asymmetry between the management and stakeholders, which leads to an improvement of the stock liquidity and makes it more attractive to different types of investors (Healy et al., 1999). Therefore, it can be assumed that the increase in the company's voluntary disclosure is associated with a decrease in the cost of capital or an increase in the liquidity of its shares, however, both positions result in an improvement in the company's performance.

To the best of the researcher's knowledge, there is a lack of direct empirical studies regarding the association between voluntary internet disclosure and firm financial performance in general and for emerging markets in particular. Therefore, this chapter aims to investigate the potential economic consequences of adopting CIR that encourage Saudi listed companies to use the internet in disclosing information to their stakeholders; this can be fulfilled by assessing the influence of CIR total and its components on firm financial performance. By doing so, the third question of this study is answered. The remainder of this chapter is structured as follows: section 8.2 reviews prior studies on CIR economic consequences, section 8.3 introduces the theories used to explain the impact of CIR and its components on firm financial performance and the hypotheses for these relationships, section 8.4 describes the models that examine the relationships between firm financial performance and CIR and its components, section 8.5 reports and discusses the statistical results of the relationship between CIR total and firm financial performance in both the bivariate and multivariate analyses, section 8.6 discusses the consequence of CIR components on firm financial performance and, finally, section 8.7 presents the summary of this chapter.

8.2 Prior studies

Many empirical studies on disclosure have attempted to identify the association between disclosed information and firm performance. However, these studies vary in terms of disclosure types and firm performance proxies. Several studies have examined the relationship between paper-based disclosure, either mandatory or voluntary, and firm performance (Healy and Palepu, 1993; Healy et al., 1999; Healy and Palepu, 2001; Haggard et al., 2008; Wang et al., 2008; Hassan et al., 2009; Nekhili et al., 2106 and Schoenfeld, 2017), while a number of recent studies have investigated the relationship between corporate governance disclosure and firm performance (Padgett and Shabbir, 2005; Bhagat and Bolton, 2008; Ronnie Lo, 2009; Ammann et al., 2011; and Albassam, 2014). However, only a few studies have examined the impact of internet disclosure on firm performance (Hunter and Smith, 2009; Lai et al., 2010; Elsayed, 2010). With respect to firm performance, many proxies have been used in the prior studies. Although some studies use one measure for firm performance, such as market-to-book ratio, cumulative stock returns, return on assets (ROA) or Tobin's Q (see: Healy et al., 1999; Vafeas, 1999; Baek et al., 2004; Haggard et al., 2008; Wang et al., 2008; Chi, 2009; Hassan et al., 2009; Ronnie Lo, 2009; Ammann et al., 2011; Ruiz-Mallorquí and Santana-Martín, 2011; Mahadeo et al., 2012), the mainstream among the previous studies use a combination of measures such as: Tobin's Q, return on assets (ROA), return on equity (ROE), stock return, dividend yield and

Z-score by Altman (see for example, Hax, 2003; Padgett and Shabbir, 2005; Haniffa and Hudaib, 2006; Bhagat and Bolton, 2008; Epps and Cereola, 2008; Al-Hussain, 2009; Al-Saidi, 2010; Elsayed, 2010; Azim, 2012; Zhang, 2012; He, 2013; Albassam 2014; Qasim, 2014; Vo and Nguyen, 2014; Ahmed and Hamdan, 2015; Al-Saidi and Al-Shammari, 2015; Rostami et al., 2016; Zabri et al., 2016; Abdallah and Ismail, 2017).

Among those few studies that have investigated the influence of internet disclosure on firm performance is the study of Hunter and Smith (2009), who apply a longitudinal study from 1991 to 1997 to examine the effect of adopting internet financial reporting practices in five securities markets, namely Brazil, India, Indonesia, Russia, and South Africa, at both the macro-economic and micro-economic levels. Using market returns (the Mean Returns, the Market, and the Market Adjusted Returns models), the results of this study show that market performance of securities listed on emerging market stock exchanges improved after the commercialization of the internet in India, Indonesia and South Africa. By using electronic disclosure, those companies can attract more outside investors to invest in their stocks. Further, the study offers evidence for a positive reaction of the market (through the positive abnormal returns) to the announcement of website launching by companies in emerging markets.

Furthermore, Lai et al. (2010) conducted a study to explore the economic consequences of internet financial reporting of Taiwan listed companies. Using stock price as a proxy for the economic consequence and the Final Prediction Error (FPE) methodology, they find that disclosing information via the internet has a positive and significant impact on stock prices. In addition, this study applies the event study methodology to examine the expected impact of internet financial reporting on the abnormal return of the firm's stocks. The results suggest that firms that disclose financial information on the internet experience abnormal returns significantly higher than those without IFR. That is, the higher the degree of information disclosure, the higher the abnormal return on the stock prices.

Moreover, to assess the economic consequences of corporate internet reporting, Elsayed (2010) investigates the impact of corporate internet reporting and its components on firm performance in the Egyptian context. Two multivariate models are used in this study, depending on two different measures of firm value, namely Tobin's Q ratio and market-to-book equity ratio. The findings reveal that internet reporting by Egyptian listed companies has a significant and positive influence on firm value. Recently, Bin-Ghanem and Ariff (2016) examined the influence of IFR on firm value in 152 financial companies in the GCC countries. They use a disclosure index includes 35 items to measure the extent of IFR. The findings of multiple regression analysis, after controlling for firm characteristics and country of origin, reveal that

IFR has no effect on firm value for GCC countries financial companies. However, this study is subject to some limitations, including restricting the sample to financial companies and the relatively limited number of items in the IFR index.

As mentioned above, most of the prior studies have investigated the consequences of printed disclosure, mandatory or voluntary or both. However, limited studies have addressed the consequences of internet reporting. Further, to the best of the researcher's knowledge, no prior empirical study was found concerning the impact of internet reporting on firm financial performance in Saudi listed companies. Accordingly, since the consequence of internet reporting is still an empirical issue and needs more consideration, this study aims to fill the gap in the literature on the consequences of CIR by examining the impact of CIR and its components on the firm financial performance of Saudi listed companies. The theoretical base for the association between CIR and firm financial performance as well as the hypotheses formulation are presented in the following section.

8.3 Theoretical foundations and hypotheses

The relationship between disclosure and firm financial performance can be clarified in light of various theories. As agency theory explains, the problem of information asymmetry and agency conflicts between managers and investors increases the need for more improved disclosure (Healy and Palepu, 2001). Therefore, management tends to disclose more information to mitigate these problems and reduce agency costs, which may lead to an increase in firm performance (Wang et al., 2008).

Furthermore, based on signalling theory, managers, especially in emerging markets, prefer to signal good news, such as positive abnormal returns, in the form of voluntary disclosure to distinguish themselves from other counterpart companies (Watson et al., 2002), whereby the higher influence of the signal may lead to attract more investors and greater effect on firm's value (Jizi, 2013). That is, companies that achieve higher profitability levels are motivated to disclose more information to demonstrate their ability to increase the value to shareholders and to give a good impression of their performance to the public (Singhvi and Desai, 1971). In contrast, companies that are experiencing lower profitability levels may feel threatened and attempt to obscure their poor performance by disclosing less information (Wang et al., 2008). In addition, as many investors tend to rely more heavily on information disclosed on the company's website to make their investment decisions (ibid), companies attempt to attract those investors by investing more in internet technology, which may increase stock liquidity and, in turn, influence firm performance.

Regarding the diffusion of innovation theory, the growing adoption of the internet as an information dissemination tool arises from its distinctive features such as timeliness, constant availability, wide-reaching and easy access. By using the internet to disclose more useful and relevant information, the company effectively makes its performance information available to all stakeholders. Many benefits can be obtained when the company discloses information via the internet. This adoption leads to attracting more investors, and hence increasing stock liquidity, reducing the cost of capital and enhancing firm value (Lai et al., 2010). Thus, adopting the internet as a disclosure means satisfies the company's needs and attains the compatibility feature of being an adoption of an innovation (Elsayed, 2010). However, some researchers argue that firm performance is inversely influenced by the level of disclosure since a high level of disclosure may be considered as a signal of bad news. Hence, this detailed disclosure might be perceived as a way of justifying a firm's weak results and reduces the likelihood of legal liability, which may negatively affect firm performance (Wang et al., 2008). On the other hand, a low level of disclosure may give investors and other stakeholders the impression that the results are satisfactory and there is no need for more information which, in turn, increases the performance level of the firm (Wallace et al., 1994).

Previous disclosure literature provides inconclusive results concerning the economic consequences of disclosure. While some empirical studies suggest a positive and significant relationship between disclosure and firm performance (e.g. Healy et al., 1999; Haggard et al., 2008; Chi, 2009; Elsayed, 2010; Lai et al., 2010; Schoenfeld, 2017), others reveal mixed results. Hunter and Smith (2009) report that some of their sample countries, (i.e. Indonesia, India and South Africa) show a positive and significant association; however, this association is negative and significant in Brazil and Russia. Similarly, Hassan et al. (2009) demonstrate that the association between disclosure and firm value differ depending on the type of disclosure. With regard to mandatory disclosure, a negative and significant impact was found on firm value, yet voluntary disclosure shows a positive and insignificant relationship with firm value. A significant negative influence was found on firm value when both types of disclosure are jointly considered in the same model. Further, an insignificant result was reported by Wang et al. (2008) and Nekhili et al. (2016), who find no empirical evidence to support the relationship between disclosure and firm performance.

Although the impact of disclosure on firm performance has been documented in many prior studies, the direction of this association remains rather unclear. Knowing that the empirical literature on the relationship between CIR and firm financial performance is very limited, the current study aims to assess the consequences of internet reporting on firm financial

performance in Saudi listed companies. That is, whether Saudi listed companies are likely to benefit from adopting CIR and thereby increase their performance. As far as the researcher is aware, no previous study investigates the consequences of CIR and its components on firm financial performance except Elsayed (2010), who examines this relationship in Egyptian listed companies. Based on the above discussion, it can be hypothesised that:

H5: There is a significant association between CIR (total, content, presentation, timeliness usability and audit) and firm financial performance of Saudi listed companies.

This main hypothesis can be divided into the following two sub-hypotheses:

H5.1: There is a significant association between CIR total and firm financial performance.

H5.2: There is a significant association between CIR content, presentation, timeliness usability and credibility and firm financial performance

In order to determine the relationship between firm financial performance and CIR and its components, the appropriate models are estimated. The following section discusses the models used to test the hypothesis related to the association between CIR total and firm financial performance.

8.4 Firm financial performance and CIR total models

This section focuses on the relationship between CIR total and firm value. The impact of CIR total on firm financial performance is examined using bivariate and multivariate analyses. In addition, three models are used to measure firm financial performance: Tobin's Q ratio, as a market-based measure, and return on assets (ROA) and return on equity (ROE) as accounting-based measures. This study adopts three different measures for many reasons. First, there is a lack of consensus between researchers about the optimal proxy to measure firm financial performance as each proxy has its own strengths and weaknesses (Haniffa and Hudaib, 2006). There are many proxies that have been used to measure firm financial performance in the literature, such as Tobin's Q ratio, return on assets, return on equity, market-to-book value, the price-earnings ratio and dividend yield (Bacidore et al., 1997). However, this study chooses Tobin's Q ratio, ROA and ROE due to their wide used in disclosure studies (e.g., Lo, 2003; Baek et al., 2004; Padgett and Shabbir, 2005; Haniffa and Hudaib, 2006; Bhagat and Bolton, 2008; Al-Hussain, 2009; Ronnie Lo, 2009; Al-Saidi, 2010; Ammann et al., 2011; Ruiz-Mallorquí and Santana-Martín, 2011; Azim, 2012; Mahadeo et al., 2012; Zhang, 2012; He, 2013; Albassam, 2014; Qasim, 2014; Vo and Nguyen, 2014; Ahmed and Hamdan, 2015; Al-Saidi and Al-Shammari, 2015; Rostami et al., 2016 and Zabri et al., 2016; Abdallah and Ismail, 2017). Second, as they are used in most of the previous studies, it is easier and better to compare

the current study's results with the existing studies' results using these measures (Albassam, 2014). Third, using both accounting and market-based measures is more effective to check the results' robustness (Haniffa and Hudaib, 2006) and to improve the measurement of the impact of CIR total on firm accounting and market performance.

Tobin's Q (Q ratio) has gained wide-ranging acceptance as a measure of firm financial performance. It is defined by Lewellen and Badrinath (1997, P.77-78) as "the ratio of the market value of the outstanding financial claims on the firm to the current replacement cost of the firm's assets", or as Lang and Stulz (1994, P.1249) define it, "the ratio of the present value of future cash flows divided by the replacement cost of tangible assets". Following many previous studies, Tobin's Q is calculated as the book value of total assets minus the total book value of equity plus total market value of equity divided by the book value of total assets (e.g. Baek et al., 2004; Haniffa and Hudaib, 2006; Elsayed, 2010; Ammann et al., 2011 and 2013; Albassam, 2014 and Al-Saidi and Al-Shammari, 2015). Tobin's Q helps to assess the impact of CIR practices on enhancing the market returns of shareholders; the higher the value of Q, the more effective the CIR and the improved market's perception of the firm's performance (Weir et al., 2002). However, when using Tobin's Q as a measure of firm financial performance, its weaknesses should be considered carefully. For example, the high market value of a company is not a conceded indicator of the managers' efficiency in managing the company's assets. It may lead, mistakenly, to the overvaluing of some companies (Beattie and Thomson, 2007). Further, measurement biases or an unfair assessment of a company's assets may affect the precision and accuracy of the Q-ratio (Lev and Sunder, 1979). Additionally, the impact that depression may have on financial markets can affect the market value of firms as it is closely related to the global economic situation (Mangena et al., 2012 and Albassam, 2014).

Both return on assets (ROA) and return on equity (ROE) have been commonly used together as a measure of firm financial performance by many researchers (e.g. Padgett and Shabbir, 2005; Azim, 2012; Zhang, 2012; Abdallah and Ismail, 2017; Vo and Nguyen, 2014; Ahmed and Hamdan, 2015 and Zabri et al., 2016). ROA is defined as "income before extraordinary items for the fiscal period divided by total assets for that same period" (Epps and Cereola, 2008, P.1139). It informs the investors regarding the total earnings that the firm manages to generate from its invested capital assets (ibid). As with the Q-ratio, ROA also has some advantages and disadvantages. It is claimed that ROA is a well-understood measure of the corporations and fairly represents the actual corporate performance (Kim, 2005 and Ponnu, 2008). Moreover, Mangena et al. (2012) argue that ROA is a more powerful performance measure than other accounting measures as it possesses distributional properties, i.e. the total

assets are strictly positive, while firm's equity might be negative or zero (Albassam, 2014). Finally, when ratios are used to express financial performance, the systematic effect of size on the variables under examination is controlled (Lev and Sunder, 1979). Nevertheless, some criticism has been aimed at ROA, such as: first, it depends on the estimated value of a firm's assets, which may be biased or subjective; second, the value of assets is associated with the accounting policies, and changes in those policies can lead to changes in assets value; and third, it is possible that the management manipulates the figures to enhance the company's image (Lev and Sunder, 1979). With respect to ROE, it is "generally defined as a ratio of net profit to net worth" (Ronnie Lo, 2009, P.212). Zabri et al. (2016) define it as "the income before interest expense for the fiscal period divided by total shareholders' equity for that same period". Return on equity shows an investor the amount of profit the company can generate from the money invested by its shareholders (Epps and Cereola, 2008). ROE has been proven to be a reliable performance measure for stakeholders (Johnson and Greening, 1999) and for most investors, it is perceived as an appropriate measure in both the short and long term (Brealey and Myers, 2000). However, the corporate equity value can be negative or zero (due to restructuring, for example), which will lead to a negative ROE. With a negative ROE, this can be considered as if the firm is making a loss, which is not true in this case (Ronnie Lo, 2009). Table 8-1 presents the dependent variables used in the model.

To overcome the limitations in the aforementioned performance proxies, a set of control variables that have been widely used in prior studies is examined in this study to consider the possible impact of other factors on firm financial performance. These variables are firm size, leverage, board size, role duality, board independence, block holder ownership, director ownership and audit committee independence. The same proxies that have been previously provided in chapter three are applied to measure these independent variables. The operationalisation of the independent variables is summarized in Table 4-1(see chapter four). Therefore, to examine the association between firm financial performance and CIR total, three models are used:

$Q = \alpha + \beta_1 CIRc + \beta_2 SIAZEc + \beta_3 LEVc + \beta_4 BSIZEc + \beta_5 RDULc + \beta_6 BINDEPc + \beta_7 BLOCKc + \beta_8 DOWNER c + \beta_9 AUINDEP c + \varepsilon ic.$

$ROA = \alpha + \beta_1 CIRc + \beta_2 SIAZEc + \beta_3 LEVc + \beta_4 BSIZEc + \beta_5 RDULc + \beta_6 BINDEPc + \beta_7 BLOCKc + \beta_8 DOWNER c + \beta_9 AUINDEP c + \varepsilon ic$

$ROE = \alpha + \beta_1 CIRc + \beta_2 SIAZEc + \beta_3 LEVc + \beta_4 BSIZEc + \beta_5 RDULc + \beta_6 BINDEPc + \beta_7 BLOCKc + \beta_8 DOWNER c + \beta_9 AUINDEP c + \varepsilon ic$

Where:

a: intercept.

c: company identifier.

The dependent variables are:

Q: Tobin's Q.

ROA: return on assets.

ROE: return on equity.

The independent variables are: CIR = total index of corporate internet reporting, SIZE = firm size, LEV = leverage, BSIZE = board size, RDUL = role duality, BINDEP = board independence, BLOCK = block holder ownership, DOWNER = director ownership and AUINDEP = audit committee independence and ε = error term.

Table   8-1: Summary of the dependent variables used for firmfinancial performance and CIR total models

Dependent variable	Proxy
Tobin's Q	Ratio of total assets minus book value of equity plus market value of equity to total assets
ROA	Operating profit to total assets
ROE	Operating profit to total book value of equity

To investigate the impact of CIR total on firm financial performance, statistical analysis was applied. Univariate descriptive statistics is presented, followed by bivariate and multivariate analyses to evaluate and assess this relationship. The next section discusses these analyses in detail.

8.5 Data analysis

8.5.1 Univariate analysis

The descriptive statistics for firm financial performance measures are summarised in Table 8-2 (see chapter five for the descriptive statistics for the independent variables). As shown in Table 8-2, the highest Tobin's Q ratio among the sampled companies is 8.339, whilst the lowest is .737 and the mean is 2.069. As the mean of this ratio exceeds "1", it indicates that Saudi listed companies, on average, use their resources effectively. The mean of the Tobin's Q is comparable with prior studies in developing countries. For example, Albassam (2014) finds a Q ratio of 2.63 in Saudi Arabia, while Baek et al. (2004) in South Korea, Ronnie Lo (2009) in Hong Kong, Elsayed (2010) in Egypt and Abdallah and Ismail (2017) in GCC countries report Q-ratios of 1.099, 1.40, 1.421 and 1.156, respectively. Further, both Qasim (2014) in the UAE and Vo and Nguyen (2014) in Vietnam find Q ratio less than 1 (0.880 and 0.739, respectively). Similar to this study's result, in the developed countries, Bhagat and Bolton (2008) report a Q

ratio of 2.072 in the US. Based on ROA, there is a noticeable deviation between sampled companies as ROA varies from -0.207 to 0.417 with an average of 0.053. This result reveals the management's ability to generate profit from firm assets. However, the minimum value of ROA reveals a negative figure, which implies that some of the companies experienced a financial loss during the sample period. The mean value of ROA is consistent with existing studies in emerging markets. A very similar result was reported by Al-Hussain (2009) in Saudi banks, which is 0.04, while 0.056 was found by Al-Saidi and Al-Shammari (2015) in Kuwait. In Malaysia, Zabri et al. (2016) recently found the average ROA of 0.087, while Haniffa and Hudaib (2006) found it to be 0.0256. However, a higher average of ROA is reported by Padgett and Shabbir (2005) in the UK and Rostami et al. (2016) in the Tehran stock exchange, namely 0.0978 and 0.0803, respectively. In Bahrain, Ahmed and Hamdan (2015) find that the mean value of ROA fluctuates from 0.52% to 8.08% in the sampled period of 2007–2011. Furthermore, the descriptive statistics of ROE show that it ranges between -0.27% and 1.22% with an average of 0.016%. This mean value of ROE shows the poor performance of Saudi listed companies in creating profit from shareholders' equity compared with prior studies. The average ROE varies in prior studies; Padgett and Shabbir (2005), Abdallah and Ismail (2017) and Ahmed and Hamdan (2015) report an average of 4.50%, 4.20 % and 4.58%, respectively, while He (2013), Vo and Nguyen (2014) and Zabri et al. (2016) find a higher average of 10.47%, 15. 90% and 19.88%, respectively.

Table   8-2: Descriptive statistics for firm financial performance measures

Measures	Minimum	Maximum	Mean	Std. Deviation
Tobin's Q	.737	8.339	2.0686	1.25099
ROA	-.207	.417	.05303	.10137
ROE	-.0027	.0122	.000164	.001109

To examine the influence of CIR total on firm financial performance, bivariate and multivariate analyses are used. The next section discusses the bivariate analysis.

8.5.2 Bivariate analysis

The current study uses both parametric and non-parametric tests to examine the association between firm financial performance and each independent variable. Table 8-3 shows the relationship between firm financial performance measured by Tobin's Q ratio, ROA and ROE and the continuous independent variables using the Pearson test as a parametric test and the Spearman test as a non-parametric test. Similarly, Table 8-4 presents the results of the T-test

(parametric test) and Mann-Whitney test (non-parametric test) for the association between role duality as a dummy variable and firm financial performance measures.

Table 8-3: Bivariate analysis between firm financial performance measures and continuous variables

Variable	Pearson			Spearman		
	Tobin's Q	ROA	ROE	Tobin's Q	ROA	ROE
CIR total	-.348***	.095	.007	-.444***	.136*	.234***
Firm size	-.435***	.100	.048	-.546***	.210***	.350***
Leverage	-.293***	-.353***	-.104	-.350***	-.374***	-.084
Board size	-.214***	.042	.028	-.142*	.035	.092
Board independence	.034	-.107	-.160**	.017	-.132*	-.189**
Block holder ownership	-.010	.069	.255***	-.038	.031	.176**
Director ownership	-.007	.132*	-.022	.005	.232***	.194**
Audit committee independence	.176**	-.065	-.008	.177**	-.065	-.109

Table 8-4: Bivariate analysis between firm financial performance measures and role duality (dummy variable)

Role duality		Tobin's Q		ROA		ROE	
T test							
		Mean	T value	Mean	T value	Mean	T value
yes	10	1.79336	-1.515	.05021	-.199	.0000830	-.925
No	160	2.08582		.05320		.0001688	
Mann-Whitney test							
		M. Rank	Z value	M. Rank	Z value	M. Rank	Z value
yes	10	87.00	.099	89.90	.291	72.20	-.881
no	160	85.41		85.22		86.33	

***. Correlation is significant at the 0.01 level, **. Correlation is significant at the 0.05 level and *. Correlation is significant at the 0.10 level (2-tailed).

The tables above show that the correlation levels vary among the variables for these two tests. While CIR total is negatively correlated with Tobin's Q at the 1% significance level in both tests, it reveals a positive relationship with ROA and ROE, but at different significant levels (insignificant for the Pearson test and at the 10% and 1% levels for the Spearman test). Likewise, firm size has a negative and significant relationship with Tobin's Q at the 1% level, yet it is positively associated with ROA and ROE, insignificantly in the Pearson test and at the 1% significance level in the Spearman test. Further, both tests reveal similar results regarding leverage, board size, block holder ownership and audit committee independence with a slight difference in the significance level. Leverage is negatively correlated only with Tobin's Q and ROA at the 1% significance level, whereas board size is associated negatively with Tobin's Q only at the 1% and 10% levels. However, block holder ownership has a positive relationship with ROE at the 1% and 5% levels and audit committee independence is positively associated with Tobin's Q only at the 5% level in both tests. Concerning board independence, a negative and significant relationship has been found with ROE at the 5% level in both tests and with ROA at the 10% level in the Spearman only. Moreover, director ownership shows a positive association with ROA at the 10% and 1% levels in the Pearson and Spearman tests, respectively, and at the 5% level with ROE in the Spearman test. Finally, role duality is the only variable that is insignificantly correlated with all models in both the parametric and non-parametric tests.

The next section presents the results obtained by performing the multivariate regression, which is used to examine the impact of CIR total on firm financial performance. The same procedures that were used in chapter six are applied.

8.5.3 Multivariate analysis

To investigate the relationship between CIR total and firm financial performance measured by Tobin's Q ratio, ROA and ROE in greater depth, three regression models are used. The OLS assumptions including linearity, multicollinearity, normality and homoscedasticity were tested[13]. These assumptions are met, except the normality of some variables, which are transformed using the log transformation method. Table 8-5 presents the results of the three regression models.

Table   8-5: The multivariate analysis findings of the firm financial performance models

variable	Model 1(Tobin's Q)			Model 2 (ROA)			Model 3 (ROE)		
	Coefficient T value	VIF	Tolerance	Coefficient T value	VIF	Tolerance	Coefficient T value	VIF	Tolerance
CIR total	-.106 -1.226	1.654	.604	.051 .557	1.654	.604	-.018 -.184	1.654	.604
Firm size	-.347 -3.890***	1.754	.570	.159 1.70*	1.754	.570	.012 .126	1.754	.570
Leverage	-.238 -3.231***	1.194	.838	-.439 -5.67***	1.194	.838	-.208 -2.556**	1.194	.838
Board size	-.007 -.087	1.289	.776	.013 .164	1.289	.776	.014 .166	1.289	.776
Board independence	-.040 -.483	1.537	.651	-.092 -1.053	1.537	.651	-.060 -.647	1.537	.651
Role duality	-.074 -1.078	1.038	.963	-.071 -.989	1.038	.963	-.036 -.475	1.038	.963
Block holder ownership	.177 2.084**	1.592	.628	.050 .563	1.592	.628	.304 3.237***	1.592	.628
Director ownership	-.091 -1.279	1.124	.890	.056 .745	1.124	.890	-.129 -1.641	1.124	.890
Audit committee independence	.072 .949	1.267	.789	-.001 -.017	1.267	.789	.030 .359	1.267	.789
Constant	6.637***			-.033			.148		
F	6.666***			4.375***			2.266**		
Adjusted R^2	.232			.152			.063		

***. Correlation is significant at the 0.01 level, **. Correlation is significant at the 0.05 level and *. Correlation is significant at the 0.10 level (2-tailed).

The above table shows that the VIF values range from 1.038 to 1.754, which are less than the critical value of 5, and the tolerance values fall between 0.570 and 0.963, which are greater than 0.2 for all the variables. This suggests that multicollinearity is not a serious problem for these models. Besides, the result of correlation test shows that autocorrelation and multicollinearity problems do not exist (see appendix 17 for the correlation matrix). The F values vary from 6.67 in Tobin's Q model to 2.27 in ROE model with a significance level of 1% and 5%, which indicates that the independent variables used in the models barely explain

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[13] Appendix 16 show the result of linearity, normality and homoscedasticity tests for the three models.

part of firm financial performance. The highest value of adjusted R^2 is 23.2% for Tobin's Q model followed by 15.2% for the ROA model. These relatively low values of adjusted R^2 imply the low explanatory power of the three models, especially for ROE model, where the model accounts for only 6.3% of the variation in firm financial performance.[14]

The results of the firm financial performance models show that CIR total has no significant association with firm financial performance. Further, a few significant variables were introduced by these models; leverage is the only variable that shows a significant relationship with firm financial performance in all models at the 1% and 5% levels, whereas firm size is negatively associated at the 1% level with Tobin's Q and has a positive relationship at the 10% level in the ROA model. Moreover, block holder ownership reveals a positive association at the 5% level with Tobin's Q and the 1% level with ROE. However, the other variables, namely board size, board independence, role duality, director ownership and audit committee independence, are insignificantly associated with firm financial performance in all models. A summary of the results of both the bivariate and multivariate analyses are combined in Table 8-6. The next section provides a detailed discussion of the results of both analyses.

Table   8-6: The bivariate and multivariate analyses findings of the firm financial performance models

variable	Bivariate analysis						Multivariate analysis		
	Parametric tests			Non-parametric tests					
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
CIR total	(-)***	+	+	(-)***	*	***	(-)	+	(-)
Firm size	(-)***	+	+	(-)***	***	***	(-)***	*	+
Leverage	(-)***	(-)***	(-)	(-)***	(-)***	(-)	(-)***	(-)***	(-)**
Board size	(-)***	+	+	(-)*	+	+	(-)	+	.+
Board independence	+	(-)	(-)**	+	(-)*	(-)**	(-)	(-)	(-)
Role duality	+	(-)	(-)	+	+	(-)	(-)	(-)	(-)
Block holder ownership	(-)	+	***	(-)	+	**	**	+	***
Director ownership	(-)	*	(-)	+	***	**	(-)	+	(-)
Audit committee independence	**	(-)	(-)	**	(-)	(-)	+	(-)	+

*Model 1: firm financial performance measured by Tobin's Q; Model 2: firm financial performance measured by ROA; and Model 3: firm financial performance measured by ROE. *** significant at 1% level, ** significant at 5% level and * significant at 10% level.

8.5.4 Discussion

Based on the results in Table 8-6, the statistical results of the relationship between CIR total and firm financial performance are inconclusive. While the bivariate analysis shows a negative and significant association when firm financial performance measured by Tobin's Q in both parametric and non-parametric tests and a positive relationship at the 10% and 5% levels with ROA and ROE in the non-parametric test only; the multivariate analysis fails to provide empirical evidence for the significant influence of CIR total on firm financial performance

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[14] The study examined the potential bias caused by omitted variables in Tobin's Q, ROA and ROE models. The three models were re-estimated with some different sets of the variables and without control variables. The results remain relatively the same for all the models whether some control variables are excluded or included.

regardless of the method of measurement. This finding indicates that CIR total has no effective impact of the firm financial performance of Saudi listed companies. Probably, the justification for such a result is that in emerging countries such as Saudi Arabia, where most individuals are economically marginalized, the use of the internet as an information dissemination tool may not be perceived as a value relevant to a large group of investors (Bhattacharya et al., 2002); hence, it has no effect on firm financial performance. Further, Hassan et al. (2009) state that the lack of a statistical significant relationship between firm financial performance and disclosure may reflect the complex nature of this relationship, which depends on many interplay factors such as disclosure type, the investigated context and the cost and benefit trade-off that is related to disclosure. This insignificant result agrees with Hassan et al. (2009), who find an insignificant but positive relationship between voluntary disclosure and firm performance, and Nekhili et al. (2016), who report that R&D voluntary disclosure has an insignificant association with firm performance. However, Elsayed (2010) finds a positive and significant relationship between CIR total and firm performance. Depending on the statistical results, it can be concluded that H5 regarding the significant association between CIR total and firm financial performance is not supported; thus, H5.1 regarding CIR total is rejected. This should answer research sub-question 3.1.

Regarding control variables, firm size shows a significant and negative relationship with firm financial performance measured by Tobin's Q at the 1% level, yet this relationship is positive with ROA and ROE at different significance levels, fluctuating from 1% in the Spearman test to 10% with ROA only in the multivariate analysis and insignificant in the Pearson test for both models and ROE in the multivariate analysis. This is in line with Zhang (2012), who finds the same association (negative and significant between firm size and Tobin's Q and ROA and an insignificant relationship with ROE) in Chinese companies. He attributes the insignificant relationship with ROE to the serious insider control problem that affects corporate governance quality, especially in large companies, causing a decrease in firm performance (ROE); hence, firm size will have an insignificant relationship with ROE. Further, large companies will have a high replacement value because total assets value is used as a proxy for replacement value, which will lower Tobin's Q value and show this negative relationship (Zhang, 2012). In addition, consistent with this study's results, firm size was found to be negatively and significantly associated with Tobin's Q by Ruiz-Mallorquí and Santana-Martín (2011) and Abdallah and Ismail (2017), positively and significantly with ROA by Azim (2012) and Qasim (2014), and insignificantly associated with ROE by Padgett and Shabbir (2005), Azim (2012) and Abdallah and Ismail (2017). In contrast, leverage shows a strong negative and significant

relationship at the 1% level of significance with all firm financial performance measures in all models except with ROE, which is insignificant in the bivariate analysis and at the 5% level in the multivariate analysis. This implies that high performance companies prefer to use less debts as these may restrict the financial flexibility of the company (Padgett and Shabbir, 2005). Similar results are reported by many researchers, such as Padgett and Shabbir (2005), Ronnie Lo (2009), Zhang (2012), Abdallah and Ismail (2017), Qasim (2014) and He (2013). Concerning block holder ownership, a positive and significant association was found at the 1% level of significance (5% in the Spearman test) with firm financial performance (ROE) and at the 5% level with Tobin's Q model in the multivariate model only. This is confirmed by Elsayed (2010), He (2013), Zhang (2012) and Ahmed and Hamdan (2015). However, Haniffa and Hudaib (2006) report a significant relationship between block holder ownership and Tobin's Q, but in the negative direction.

Moreover, contradictory results were obtained regarding the other variables in terms of direction and significance. Only the bivariate analysis shows some significant relationships for these variables. Board size is negatively associated with Tobin's Q only at the 1% and 10% levels in the Pearson and Spearman tests, while board independence has a negative and significant relationship with ROE at the 5% level in both tests and at the 10% level with ROA in the Spearman test. Similarly, director ownership has a positive relationship with ROA at the 10% and 1% levels in the Pearson and Spearman tests, respectively, and at the 5% level with ROE in the Spearman test. Audit committee independence is also positively associated with only Tobin's Q at the 5% level of significance and, finally, role duality has an insignificant relationship with all models. These findings are consistent with the results of many prior studies, for example Ronnie Lo (2009), Azim (2012), Mahadeo et al. (2012), Zhang (2012) and Vo and Nguyen (2014), who find an insignificant relationship between board size and firm performance, while Haniffa and Hudaib (2006), Ronnie Lo (2009), Azim (2012), Zhang (2012) and Vo and Nguyen (2014) report the same insignificant relationship with board independence. Similarly, an insignificant relationship between firm financial performance and role duality was reported by Azim (2012), Zhang (2012), Vo and Nguyen (2014), Ahmed and Hamdan (2015) and Nekhili et al. (2106). Further, Padgett and Shabbir (2005), Ronnie Lo (2009), Nekhili et al. (2106) find director ownership insignificantly associated with firm performance. Audit committee independence also has been found to have an insignificant relationship with firm performance by Azim (2012) and Nekhili et al. (2106). In summary, only three variables are found to have a significant association with firm financial performance; those are firm size, leverage and block holder ownership.

The next point worth revealing is the influence of CIR components on firm financial performance. The following section presents the results of these relationships in details.

8.6 The consequence of CIR components on firm financial performance

After examining the impact of CIR total on firm financial performance, it may be useful to examine the influence of CIR components on firm financial performance as well. This section provides the results of both the bivariate and multivariate analyses of the association between firm financial performance (measured by Tobin's Q, ROA and ROE) and each component of CIR. Table 8-7 shows the bivariate analysis results of the relationship between CIR components and firm financial performance, while Table 8-8 presents multivariate findings for these relations.

Table   8-7: Bivariate analysis between firm financial performance measures and CIR components

CIR components	Pearson Correlation			Spearman		
	Tobin's Q	ROA	ROE	Tobin's Q	ROA	ROE
Content	-.326***	.085	-.012	-.411***	.111	.205***
Presentation	-.300***	.125	.062	-.372***	.149*	.254***
Timeliness	-.304***	.214***	.051	-.352***	.241***	.284***
Usability	-.309***	.045	-.001	-.374***	.051	.147*
Audit	-.327***	.044	.008	-.361***	.074	.129*

*** significant at 1% level, ** significant at 5% level and * significant at 10% level.

As can be seen from Table 8-7, all CIR components are strongly associated with firm financial performance measured by Tobin's Q in both bivariate tests at the 1% level of significance. However, when firm financial performance is measured by ROA, it is only associated with CIR timeliness at the 1% level in both tests and with CIR presentation at the 10% level in the Spearman test only. Further, just the Spearman test shows a significant association between all CIR components and firm financial performance (ROE) at different levels, whereas no significant relationship was found in the Pearson test. Moreover, the multivariate analysis results in Table 8-8 reveal that CIR timeliness is marginally related to ROA, and similarly CIR audit is related to Tobin's Q at the 10% level. Apart from this, all the other CIR components are insignificantly associated with firm financial performance measures.

Table   8-8: Multivariate analysis between firm financial performance measures and CIR components

CIR components	Model: Tobin's Q				Model 2: ROA				Model 3: ROE			
	R2	F	Cof	T value	R2	F	Cof	T value	R2	F	Cof	T value
Content	.232	6.661***	-.102	-1.212	.151	4.344***	.026	.291	.065	2.301**	-.052	-.559
Presentation	.227	6.506***	-.057	-.669	.158	4.525***	.106	1.182	.067	2.339**	.074	.785
Timeliness	.234	6.728***	-.115	-1.383	.168	4.790***	.158	1.820*	.063	2.262**	.005	.060
Usability	.225	6.447***	-.021	-.239	.151	4.338***	.018	.193	.063	2.269**	-.023	-.243
Audit	.239	6.906***	-.139	-1.757*	.151	4.333***	-.001	-.012	.063	2.262**	.004	.045

*** significant at 1% level, ** significant at 5% level and * significant at 10% level.

As can be seen from Table 8-8, the CIR components show similar values of adjusted R^2 and F to those of CIR total regarding each firm financial performance measure. The explanatory

power of each component varies among the different models. The highest adjusted R^2 was found in Tobin's Q model (.225 ~ .239), whereas the lowest was reported in the ROE model (.063 ~ .067). The findings of the consequences of the components of CIR agreed, to a large extent, with the results of the consequences of CIR total, whereby CIR components have proven to be not related to firm financial performance. Many potential reasons can explain such findings. First, the Saudi market does not seem to be affected by internet disclosure, in contradiction to the efficient market theory, which states that firm value will respond, in an equilibrium, to any useful information disclosed if the market is efficient. This possibly means that the Saudi market, as an emerging and inefficient market, is not familiar with analysing firms' performance using the disclosed information on their websites, hence, firm financial performance does not respond to any information disclosed via the internet (Lai et al., 2010). Second, as the Saudi market is still underdeveloped, investors are unlikely to place greater reliance on the internet as a communication medium, which implies that firm financial performance is not expected to be influenced by CIR and its components (Hunter and Smith, 2009 and Wang et al., 2008). Finally, the insignificant relationship between CIR components and firm financial performance may be attributed to the interaction of the different and conflicting factors that affect this relationship, such as the environment being examined, disclosure type and disclosure cost-benefit considerations (Hassan et al., 2009). However, the negative association between some firm financial performance measures and CIR components might be due to costs of CIR outweighed its benefits. Another explanation is that disclosing more information may cause a competitive disadvantage and lead to negative net benefits, which may reduce firm financial performance. Moreover, investors may perceive the greater CIR by the management as a negative signal, since they misinterpret management intentions in producing more information and believe that these actions signal intentions for undesirable events in the future, hence investors may change their behaviour accordingly, causing a decline in firm financial performance (ibid).

Based on the above results, H5.2, regarding the significant impact of CIR content, presentation, timeliness, usability and audit on firm financial performance, is rejected. Consequently, the research sub-question 3.2 is answered.

In brief, the aforementioned findings indicate that CIR total and its components have no explanatory power over the firm financial performance of the Saudi listed companies and the influence of CIR total and its components on firm financial performance is rather ambiguous; therefore, hypothesis H5 is rejected. This argument answers the third question of the current study and fulfils its third objective.

8.7 Summary

This chapter seeks to determine the impact of CIR and its components on firm financial performance in Saudi listed companies to answer the third research question and its sub questions. After reviewing the prior studies and discussing the related theories, the hypotheses that explain the effect of CIR on firm financial performance are formulated. Both bivariate and multivariate analyses are employed to examine the relationship between CIR and its components and firm financial performance. Further, three models are used to measure firm financial performance: Tobin's Q ratio, return on assets (ROA) and return on equity (ROE). On average, the results of the two tests which are used in the bivariate analysis, parametric and non-parametric, show a significant relationship between CIR and firm financial performance. However, regarding the multivariate analysis, all the three models indicate that CIR total has no impact on firm financial performance after controlling for some variables. Similarly, the findings reveal that the association between each CIR component and firm financial performance, in general, is insignificant. Comparing these findings with the literature shows some varations. In developed countries, CIR has no effect on firm financial performance of French companies (Nekhili et al., 2016), however, it improves firm financial performance in Taiwan (Lai et al., 2010). In developing countries, it was found that CIR enhances firm financial performance in India, Indonesia, South Africa (Hunter and Smith, 2009) and Egypt (Elsayed, 2010), though, CIR has no impact on firm financial performance for GCC countries (Bin-Ghanem and Ariff, 2016). Presumably, the logic for this study's results is that the Saudi market, as an emerging and inefficient market, barely relies on the internet as the main source of information, which implies that it is less likely that CIR influences firm financial performance. Such findings suggest that other factors, such as cultural, social or professional factors may be more relevant for justifying the variation in CIR practice in the Saudi context.

CHAPTER 9
CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

9.1 Introduction

This study investigates the extent and determinants of CIR by Saudi listed companies and the influence of CIR on firm financial performance. Although the CIR practice is widely used in the developed countries, there little attention has been paid to this phenomenon in the developing countries. However, the recent technological development in developing countries has introduced the internet as a useful channel for companies to communicate timely and low-cost information to their stakeholders. In Saudi Arabia, as a developing country, the internet has the potential to improve corporate reporting. Given the rapid growth of the Saudi security market and the new changes, such as the issuance of the SCGC in 2006 and its subsequent modifications, the transition to IFRS starting in 2017 and the increased foreign investment, it is essential to provide reliable information for users by enhancing transparency, reporting requirements and disclosure practices. As such, Saudi companies have started to adopt CIR as a means of disseminating information to satisfy their investors' needs and to support their competitive position in the market. Thus, this study aims to assess the actual CIR practice by SLC and explore the different factors that affect this practice. Moreover, the impact of CIR on firm financial performance is identified to obtain a clear understanding of the economic consequences of CIR implementation. This chapter provides a summary of the main findings of this study in section 9.2. Then, the contributions to the literature on disclosure is presented in section 9.3 and the limitations of the study are addressed in section 9.4. Finally, section 9.5 offers suggestions for future research.

9.2 Research findings

This section summarises the findings of the current study obtained from statistical tests that are used to answer the research questions regarding the extent of CIR by Saudi listed companies (SLC), the relationships between CIR and both firm characteristics and corporate governance, and the impact of CIR on firm financial performance. To evaluate the level of CIR, the study uses a sample that includes 170 listed companies on the Saudi stock exchange (Tadawul) and a self-constructed checklist of 196 items. The findings reveal that the extent of CIR for SLC –

on average – is moderate (51.57%), whereby most of the companies (64%) score between 50% and 70% and only one company (Umm Al-Qura Cement Company) discloses below 15% of the disclosure index items. This can be attributed to the growing interest in internet usage among Saudi companies, as evidenced by the increased number of companies that have a website (170 out of 171 SLC). Moreover, the extent of each CIR component was explored, and some variation was found between these categories. While content scores the highest level of disclosure (55.48%), timeliness scores the lowest level (42.88%). These results fulfil the first objective and answer the first research question and its sub-questions.

Based on the statistical findings, examining the association between CIR and firm characteristics shows that three firm characteristics are significantly associated with CIR total, which are firm size, liquidity and dividends. However, firm growth, leverage, industry type and audit type have insignificant relationships with CIR total. Regarding the association with CIR components, firm size is the only variable that shows a strong significant and positive association with all CIR components and, in contrast, firm growth, leverage and industry type reveal am insignificant association with all CIR components. The other variables have different levels of significance; while liquidity has a significant and negative impact on CIR content, presentation and usability, dividends has a positive and significant relationship with CIR content, presentation and timeliness and audit type has the same relationship with CIR usability and timeliness. These results provide answers for questions 2.1 and 2.2 of this study.

With respect to board characteristics variables, the findings show a weak relationship between them and CIR total and its components. Only board frequency of meeting has a negative and significant impact on CIR total and its components except CIR audit. However, the other variables of board size, board independence and role duality have no influence. As such, questions 2.3 and 2.4 are answered. Further, all ownership structure variables have insignificant associations with either CIR total or its components. The only exception is the significant relationship between government ownership and CIR audit. This provides answers to questions 2.5 and 2.6 related to the extent of the relationship between ownership structure variables and CIR total and its components. Similarly, the findings indicate that two of the audit committee variables have insignificant relationship with CIR total and its components, which are audit committee size and audit committee frequency of meeting, while committee independence is the only variable that has a strong significant association with CIR total, CIR content, presentation and audit. These results show clearly the low impact of audit committee variables on CIR and its components in the Saudi context which answer questions 2.7 and 2.8 of this study. Based on these findings, it is approved that some firm characteristics, in addition to other

factors, can explain the variation in the extent of CIR practices by SLC, thus achieving the second objective of this study. Moreover, the findings reveal that, after controlling for some variables, neither CIR total nor its components have a significant impact on firm financial performance measured by three different methods: Tobin's Q ratio, return on assets (ROA) and return on equity (ROE). Demonstrating these results answers questions 3.1 and 3.2 and fulfils the third objective.

To conclude, the study evaluates the extent of CIR practice among SLC, highlights the effect of some explanatory variables on it, and assesses the impact of CIR on firm financial performance. However, the weak relationships of a number of these variables proposes that there are other variables, such as cultural, social or professional variables, may explain more variations in CIR in Saudi Arabia.

9.3 Research Contributions

The current study contributes to the internet disclosure literature in several ways: theoretically and empiricaly.

9.3.1 Theoretical Contributions

Theoretically, the study uses a multiple-theoretical framework to get an in-depth explanation of CIR practice and its association with some main factors in an emerging market. Some studies claim that theories which are used to explain voluntary disclosure in developed countries may not be relevant to developing countries. This necessitates investigating these theories in an emerging market context, namely the Saudi market, which has many distinctive features in the political, cultural, economic, and social domains. The findings indicate that some theories that apply in developed countries are applicable in developing countries and that they can be used to justify the association between the components of CIR and the explanatory factors, which have rarely been explored in prior studies. Consequently, this study helps to fill the gap in this area by employing a multiple-theoretical framework in Saudi Arabia as a developing country.

9.3.2 Empirical Contributions

Moreover, the study has many empirical contributions to the literature on CIR.

First, to the best of the researcher's knowledge, there are no previous studies in the Saudi context that explore the link between CIR and all the board of directors variables or between CIR and audit committee variables. Since both board variables and audit committee variables are essential in shaping CIR practice, as they are human aspects that contribute to the disclosure

process, concerns are raised for more in-depth studies to explore these potential determinants. It can be argued that little contribution has been made to addressing the implication of these variables on CIR and no single study, as far as the researcher is aware, examines the relationship between CIR and board variables (independence and frequency of meetings) or audit committee variables (size, independence and frequency of meetings) in the Saudi context. Therefore, this research hopes to fill this gap by examining the association between the detailed board structure and audit committee variables and CIR in the SLC.

Second, another area of concern are the economic consequences of corporate disclosure, which have been explored in many studies; however, only a very limited number address the economic consequences of disclosure on the internet, suggesting that much attention should be paid to investigate this association and further research needs to be undertaken to consider this important area. This study, to the best of the researcher's knowledge, is the first to evaluate the economic consequences of CIR and its components in the Saudi context by assessing its effects on the firm value of Saudi listed companies.

Third, the current study expands the CIR classification for the first time into five components: content, presentation, timeliness, usability and audit. CIR components have been rarely considered in previous studies and most of the studies which considered them use two or three of these components in their model. This study considers all the CIR components, which contributes to the disclosure studies by offering insight into CIR practice and its association with the key factors.

Fourth, the checklist used to measure the CIR contains non-financial information, which has not been widely tested in the previous studies. Most of the prior studies concentrate on the extent of internet financial reporting and neglect the disclosure of non-financial information and, also, all the previous studies conducted in Saudi Arabia focus on IFR and not CIR. Furthermore, the checklist includes two items related to the use of social media, which are new and not found in prior studies because of the growing interest in social media and most companies tend to use them significantly. Providing that most of the literature in the internet disclosure field has been conducted in the developed countries, hence, it is important to consider these issues in developing countries, such as Saudi Arabia, to add more depth to the exploring of CIR practice.

Fifth, prior studies in the Saudi context use relatively smaller sample sizes than this study. For example, 46 (Al-Saeed, 2006b) 113 listed and unlisted companies (Al-Motrafi, 2008), 74 (Alshowaiman, 2008) and 52 (Al-Sartawi, 2016). Therefore, this study may be deemed as an extension of prior studies in terms of sample size, which can enhance the ability to generalise

the current findings. In this regard, the study may be useful to understand CIR and its determinants and generalise its findings not only to other Saudi companies, but also to other companies of other developing countries, particularly, the Gulf Cooperation Council countries, which share a similar background, cultural and institutional factors with Saudi Arabia, together with other Middle Eastern countries. Due to the limited number of empirical studies on CIR and its determinants in the GCC countries, the fact that the few studies concerning CIR in the region attempt to describe the only actual practices, and the fact that only some firm characteristics are identified as potential explanatory variables for CIR, this study provides an important contribution to filling this gap in the CIR literature. Especially in this period, where there is a growing interest in investments in the GCC countries, which have shown an exceptional economic development and new regulations in favour of foreign investors over the past few years.

Finally, although CIR is growing rapidly and attracting more attention from various interested parties such as investors, regulators, companies and academics, research in this subject is very limited, especially in Saudi Arabia. The findings of this study may contribute to the literature by providing a more in-depth understanding to investors and regulators about reasons for firms to adopt CIR and what the key determinants of such adoption are. Further, accountants and auditors can benefit from these results in making decisions related to the disclosure of financial and non-financial information on the internet to improve the communication function of corporate reports.

9.4 Research limitations

It is expected that any study is subject to some limitations. Thus, the current study has few limitations, which are discussed as follows: First, one of the limitations of this study is that the research sample is restricted to listed companies in the Saudi exchange market. Although almost all the listed companies are included in the sample (just one company was excluded), it would be more informative to include all listed and unlisted companies. However, unlisted companies were excluded in this study for two reasons: (1) the study mainly relies on the availability of a company's website whereby, in general, these companies are medium-sized or small and less likely to have a website; and (2) listed companies are expected to use CIR to disclose more information voluntarily and to implement corporate governance mechanisms. Therefore, this should be considered when trying to generalise the findings of this study, even though the sample size used in this study is relatively large compared to prior studies.

Second, this study uses the quantitative and not the qualitative method to collect and analyse numerical data. Given that the aim of this study is to examine the actual CIR practice and determine the key factors that affect it, the quantitative method is considered more appropriate to this objective. Despite their benefits, qualitative methods were not used due to the difficulties encountered in making interviews and obtaining the required data.

Third, a self-structured checklist is used in this study to measure CIR. Although caution was taken when selecting the items included in the CIR index, its objectivity is not guaranteed, considering that disclosure is an abstract concept that is difficult to measure. However, several steps were taken in this study to ensure the validity of the index and overcome the subjectivity problem. Additionally, this study uses un-weighted scoring, which considers all the disclosed items in the CIR index as equally important. Thus, using a weighted index may improve the validity of the index. Choosing an un-weighted index in this study can be justified for many reasons: (1) un-weighted scoring is more common in prior disclosure studies, which makes comparisons between findings possible; (2) many previous studies indicate that there are no significant differences in using weighted or unweighted methods; (3) a weighted index needs experienced judgment to assess each item's weight, and many researchers may lack such experience; and (4) the un-weighted scoring method is more suitable and justified for this study. Further, the disclosure index may need to include other dimensions and more relevant items in order to be more comprehensive.

Finally, the study concentrates on the explanatory variables that are mostly expected to influence CIR practice in the Saudi context; however, some important variables which may be more relevant to CIR practice could not be included because of either difficulties in measuring or the unavailability of data such as social norms, cultural values, political relations and Islamic business transactions. It would be interesting to incorporate such variables that can explain the changes in CIR in the Saudi context. These limitations draw attention to new avenues for future research.

9.5 Recommendations for future research

The findings and limitations of this study suggest some opportunities for future CIR research. One of the suggestions for future research is including unlisted companies in the sample, which would allow a comparison of the extent of CIR between listed and unlisted companies. It also would be possible to examine whether the effect of the explanatory variables on CIR is the same for listed and unlisted companies. Further, a study with a larger sample size encompassing listed and unlisted companies can improve the generalisability of the results.

Another opportunity is to apply mixed methods in future research to examine CIR practice. Adopting both qualitative methods (e.g. interviews and case studies) and quantitative methods may add a more in-depth understanding to CIR and voluntary disclosure in general. The wide use of mixed methods research may improve the integration between the findings of qualitative and quantitative methods. Moreover, future research may broaden the extent of this study to include Gulf Cooperative Council countries or Middle Eastern countries instead of focusing on only one country, namely Saudi Arabia. It would be fruitful to compare the findings of this study even with other developed or developing countries, which may provide more insight into CIR practices.

Also, considering the time horizon of the research, this study is cross-sectional and is related to a specific year; thus, a longitudinal study may be helpful in assessing the CIR extent over more than one year and taking into account the development and new regulations in the Saudi market. A new research avenue could investigate CIR from different perspectives. Although this study is interested in CIR from the perspective of information providers, it may be useful to concentrate on other perspectives, such as those of auditors, policy-makers or investors.

It would also be beneficial if future research tries to explore the possibility of performing online audits to add more credibility and reliability to companies' websites. Furthermore, this study considers only online reporting as a disclosure channel. Future research can investigate different channels of disclosure and decide whether these channels have the same determinants. Also, research making a comparison between CIR and hard copy reporting can be very useful for both users and providers.

Further, it would be a good opportunity for future research to extend the current study by adding a new set of information items to the CIR index, examining new potential influence variables, such as the company's location, the age and level of education of the director and culture value and social variables, or measuring some variables by other proxies. Such issues may affect CIR practice significantly.

Finally, the current study examines CIR comprehensively; future research can focus on a specific type of disclosure such as social reporting, environmental reporting, risk management and forward-looking financial disclosure. Moreover, such studies can be conducted in Islamic countries to determine the difference of online disclosure between Islamic and non-Islamic companies regarding these types of disclosure. Recently, interests in these aspects of disclosure have increased. Many studies investigate the different types of disclosure and how to measure them in developed countries; however, few studies address these aspects in developing

countries. Thus, it is worthwhile paying more attention to those specific types of disclosure, especially when using the internet as a disclosure media.

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269

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Appendices

Appendix 1: summary of CIR studies

Research	Country	Variables	Major findings
Xiao et al. (1997)	UK	user type, size, listing status, gearing ratio, and management compensation plan.	the contingency perspective is a useful framework to investigate the impact of IT on CFR and that IT use is correlated more with internal reporting change than with external reporting change.
Craven and Marston (1999)	UK	CIR, company' size and industry type	Size, but not industry type, is a significant determinant of the extent of internet disclosure
IASC (1999)	22 countries	The level of CIR	A significant number of corporations use the internet, with variation in the level of reporting from developed to developing countries
Ismail (2002)	GCC	IFR, size, leverage, profitability, industry type, and country	some factors that affect the probability of a firm to disseminate financial information on the Internet which are a combination of firm characteristics (size, leverage, and profitability), industry type, and country
Xiao and et al. (2002)	UK	the extent and nature of CIR	that internet technology will significantly affect the future of corporate reporting and will be embodied by drivers for and barriers to change.
Matherly and Burton (2005)	U.S.	Website content, type of disclosure, the company's industry, and its size	company websites contain fewer business data, prospective data, and intangibles disclosures.
Kelton (2006)	USA	format and type of presented information	presentation format and type of Internet disclosures have considerable effects on investor judgments and asserted that there is a vital demand for taking actions to regulate Internet reporting practices.
Zager and Gulin (2006)	the Republic of Croatia	Reports format	PDF is the predominant format in the published reports, whereas some other more advanced formats, such as XBRL, have been rarely used
Hunter and Smith (2009)	Brazil, India, Indonesia, Russia, and South Africa	IFR, Stock price, abnormal returns	the Internet has positive effects in emerging markets and that market performance on stock exchanges does improve after firms' utilizing the Internet technology.
Allport and Pendley (2010)	USA	web-based reporting features	surface features of website can significantly impact users' perceptions as well as investment attractiveness.

Aly et al. (2010)	Egypt	CIR practice, profitability, foreign listed and industrial sector	nearly more than half of these companies use the websites to disclose a considerable portion of corporate information.
Garg and Verma (2010)	India	level of internet disclosure	there is a satisfied and adequate level of disclosure on the firms' websites
Hindi and Rich (2010)	U.S.	The extent of CIR	number of companies having websites has increased over time, yet these websites varied significantly in both design and quality of the disclosed information
Al-Htaybat et al. (2011)	Jordan	CIR practice	paper-copy of annual reports is the primary source of information for users in Jordan, two economic concerns affect the use of CIR; internet access cost and printing accounting reports cost
Arafa (2012)	Egypt	CIR practice	CIR is a whole process that integrated the perspective of the different involved participants to acquire a comprehensive picture of the CIR practices at the organizational level
Samaha and Abdallah (2012)	Egypt and UK	the nature web-based corporate disclosure	CIR practices in Egypt is still lagging beyond the UK and the determinants of voluntary adaption of CIR in Egypt are diverse from those documented in the UK
Kuruppu et al. (2015)	Sri Lanka	The level of CIR	59% of the sampled companies have a website, while only 43% of them disclose financial information on their websites.
Singh and Singh (2015)	India	The level of CIR	both public and private sectors use websites for financial disclosure at different levels.
Dolinšek and Lutar-Skerbinjek (2018)	Slovenia	IFR, size, profitability, age, legal form, ownership dispersion and industry sector	there is a substantial difference between the companies that use or do not use IFR. profitability and age are insignificantly associated with IFR. While size, legal form, ownership dispersion and industry sector are associated with IFR

Appendix 2: summary of firm characteristics and CIR studies

Research	Country	Variables	Major findings
Ashbaugh et al. (1999)	USA	CIR, firms' size and profitability	firms' size and profitability are crucial factors in the CIR engagement decision
Debreceny et al. (2002)	22 countries	size, listing on US securities markets, Foreign listing, the level of technology, Growth prospects and intangibles, Firm-specific market risk, leverage, Internet penetration and national disclosure level)	disclosure environment and technology level are associated with CIR presentation more than CIR content
Ettredge et al. (2002a)	USA	compulsory disclosures, voluntary disclosure, size and information asymmetry	size and information asymmetry are the vital aspects to determine the level of required disclosures on the corporate website, whereas size, information asymmetry, demand for external capital, and disclosure reputation are the main determinants of internet voluntary disclosure
Ettredge et al. (2002b)	USA	CIR, profitability, providing multiple report' formats, high earnings announcement, link to EDGAR, numbers of shareholders, financial analysts and firm size	the speed of updating corporation' website is associated with profitability and providing multiple report formats more than high earnings announcement and link to EDGAR. While numbers of shareholders, financial analysts and firm size are not explanatory variables for updating speed.
Xiao et al. (2004)	China	the proportion of institutional ownership, ownership by domestic private investors, foreign investors, and the state	there is a significant and positive relationship between the proportion of institutional ownership and CIR, while ownership by domestic private investors, foreign investors, and the state are less associated with CIR
Matherly and Burton (2005)	US	size, industry type, and type of disclosure	the amount of disseminated information varies substantially based on size, industry type, and type of disclosure
Aly et al. (2010)	Egypt	size, profitability, leverage, liquidity, sector type, auditor size and foreign listing.	the main factors that have an impact on the content and presentation of internet reporting in Egypt are profitability, foreign listing, and industrial sector (communications and financial services)
Elsayed (2010),	Egypt	company size, Profitability, leverage, Company age, legal form, assets in place, activity type, foreign listing, audit type, share volatility, share activity, share	CIR in Egypt is affected by: company size, leverage, legal form, assets in place, financial type, foreign listing, audit type, share volatility, share activity, share issuance, block holder

		issuance, block holder ownership, managerial ownership, governmental ownership, Institutional ownership, board size, Role duality, family members and foreign members.	ownership, managerial ownership, governmental ownership, board size and family members on the board. Moreover, the study revealed that there is a considerable variation in these determinants among the main components of CIR, namely content, presentation, timeliness and usability. Finally, the study indicates that firm value is positively influenced by CIR.
AbuGhazaleh et al. (2012)	Jordan	reputation and image enhancement, firm promotion, international impacts, top management believes or attitudes, management change, lack of competition and relatively long period of listed on the Jordanian stock exchange.	website presences heavily depend on several factors, viz., reputation and image enhancement, firm promotion and international impacts. The absence of a corporate website is attributed to top management believes or attitudes, management change, lack of competition and relatively long period of listed on the Jordanian stock exchange.
Hossain et al. (2012)	Qatar	firm size, age, liquidity, profitability, assets in-place and business complexity	There is a significant association between CIR and firm size, assets in-place and business complexity
Miniaoui and Oyelere (2013)	UAE	size, leverage, liquidity industry sector, diffuseness of ownership and profitability	The results reveal that size, leverage, profitability and being in the financial sector are the main predictors of IFR adoption
Dolinšek et al. (2014)	Slovenia	size, age, profitability, legal form, ownership concentration, age and sector	The findings suggest that size, ownership concentration, legal form and sector of operation significantly affect the level of IFR
Soriya and Dhaigude (2016)	India	size, profitability, productivity, liquidity, growth and leverage	The findings reveal that size, profitability, productivity and liquidity are significantly associated with CIR, while growth and leverage are not.
Ahmed et al. (2017)	Egypt	size, industry type, profitability and foreign listing, leverage, audit type, liquidity	The results show that size, industry type and foreign listing are significantly associated with CIR total, content and user support, while profitability has a significant and negative relation with presentation

Appendix 3: summary of corporate governance and CIR studies

Research	Country	Variables	Major findings
Barako et al. (2006)	Indonesia	Size, age, profitability, ownership structure, leverage, industry type, audit committee independency, and percentage of independent directors	CIR is positively associated with size and age of listed companies, whereas profitability, ownership structure, leverage, industry type, audit committee independency, and percentage of independent directors are not significantly affect CIR practices of Indonesian companies.
Abdelsalam et al. (2007)	UK	CIR and corporate governance measures (director holding, director independence, and CEO duality) size, profitability, industry, and high growth/intangibles	the comprehensiveness of CIR disclosure is associated with analyst following and other measures of corporation governance such as: director holding, director independence, and CEO duality
Abdelsalam and Street (2007)	UK	Timeliness, corporate governance: board experience, board independence, block ownership and role duality	U.K. listed companies need to enhance the timeliness of CIR in order to provide the types of information that is useful to investors
Abdelsalam and El-Masry (2008)	Ireland	CIR timeliness, board independence, ownership structure, size, audit fees and profitability	positive association between CIR timeliness and both board independence and CEO ownership, firm size plays a significant role in assessing the CIR timeliness behaviour
Ezat and El-Masry (2008)	Egypt	firm size, service activity, profitability, leverage issuance of shares, role duality, type of industry, liquidity, ownership structure, board composition and board size	the findings indicated that CIR timeliness is significantly and positively related to firm size, service activity type of industry, liquidity, ownership structure, board composition and board size
Kelton and Yang (2008)	USA	CIR and corporate governance measures: ownership structure, shareholder rights, board composition, and audit committee	corporate internet disclosure practice is influenced by corporate governance mechanisms and that firm size plays a critical role in determining the association between IFR and corporate governance.
Erer and Dalgic (2011)	Turkey	company size, the percentage of the independent directors, corporate governance rating, board size, foreign listing, managerial ownership and institutional ownership.	the results show that company size, the percentage of the independent directors and corporate governance rating are positively and significantly related to IFR. No significant

			association was found between IFR and board size, foreign listing and ownership structure variables.
Al-Shammari and Al-Saidi (2015)	Kuwait	board size, board composition, role duality, size, leverage, profitability, liquidity, industry type and ownership structure.	Kuwaiti listed companies disclose only 39% of the timeliness index's items. Further, it was found that disclosing timely information on the website of Kuwaiti companies is associated with a smaller board, more non-executive directors, the separation of CEO and chairman roles, larger financial companies and more outsider ownership.
Kamalluarifin (2016)	Malaysian	board independence, board experience, role duality, size, leverage and profitability	There is a significant association between board independence, board experience, leverage and profitability and the timeliness of CIR
Omran and Ramdhony (2016)	Mauritius	size, liquidity, leverage, industry type, profitability, board size and audit quality	Only company size, liquidity and board size show a significant relationship with IFR
Sanad and Al-Sartawi (2016)	Bahrain	CEO duality, board size, board independence, directors' ownership, ownership of top 3 shareholders, size, leverage, return on assets, sector type and audit type.	Only board size and Big4 audit firms have a positive relationship with IFR

Appendix 4: summary of CIR in Saudi Arabia studies

Research	Country	Variables	Major findings
Al-Motrafi (2008)	Saudi Arabia	CIR, size, stock market listing, the proportion of institutional ownership structure; profitability, type of industry, type of auditor, level of government ownership, individual ownership, free float, and board structure	84% of the Saudi companies have a website but only 45% of them have a financial information section, a significant association between financial internet reporting and size, stock market listing, and the proportion of institutional ownership structure; profitability, type of industry, type of auditor, level of government ownership, individual ownership, free float, and board structure show no significant relation with internet reporting behaviour.
Alshowaiman (2008).	Saudi Arabia	CIR, the Big -4 audit firms, industry, location, proportion of government ownership and the proportion of foreign ownership	Saudi companies have poor and insuffici their internet reporting, and that IFR nee more with auditing to improve audit effi effectiveness. IFR is positively associate Big4 audit firms, industry, and location
Al-Saeed (2006b),	Saudi Arabia	CIR, profitability and firm size	87% of sampled companies have website noting that the cement sector has the best implementati Furthermore, the utilization of CIR can b significantly by profitability and firm siz
Hussainey and Al-Nodel (2008)	Saudi Arabia	CIR and corporate governance	the disclosed corporate governance information considerably vary among corporations depending on industry type with bank sector placed in the highest level and industry and service sectors at the lowest one.
Al-Jaber and Mohamed (2003)	Saudi Arabia, Egypt, and Kuwait	the level and content of internet disclosure	these regional countries vary to some ext internet reporting and are straggling far b developed countries

	Al-Sartawi (2016)	Saudi Arabia		the overall level of online disclosure in th... countries is 77% and that it varies accord... country and industry type. However, this... not investigate the effect of any variables... firm characteristics or corporate governa... level of online financial disclosure

Appendix 5: Classification of Saudi listed companies in December 2014 according to industry*

	Industrial composition of companies listed on Tadawul December 2014	No. in each industry	Percentage of sample
1	Banks	12	%7
2	Petrochemical Industries	14	%8.2
3	Cement	14	%8.2
4	Retail	15	%8.8
5	Energy & Utilities	2	% 1.2
6	Agriculture & Food Industries	16**	% 9.4
7	Telecommunication & Information Technology	4	%2.3
8	Insurance	35	%20.5
9	Multi-Investment	7	%4.1
10	Industrial Investment	15	%8.8
11	Building & Construction	17	%9.9
12	Real Estate Development	8	%4.7
13	Transport	5	%2.9
14	Media and Publishing	3	%1.8
15	Hotel & Tourism	4	%2.3
	Total	171	%100

* In 8th Jan 2017 a new industry classification has been adopted by Tadawul containing 20 sectors.
** One company of this sector (Bishah agriculture company (Bishco)) was excluded.

Appendix 6: The final checklist of CIR with its 5 categories

	Content items
1	Date company established
2	Company profile
3	Vision statement
4	Mailing list of the company's key personnel
5	Phone number for investors
6	Postal address for investors
7	Human resources information/ employee profile (names, qualifications…)
8	Corporate citizenship
9	Statement of management responsibility
10	There is a social responsibility section and/or environmental section
11	The existence of investor relations section
12	Name of Investor Relations Officer
13	Discussing on product quality and safety
14	Certificate of quality assurance (ISO)or awards of best practice (for service companies)
15	Donations/sponsoring to community groups
16	Chairman's message/letter to shareholders
17	Services or products provided
18	Sales of key products
19	Market outlook
20	Advertisements for their products or services
21	Promotional items (i.e., t-shirts)
22	Investor Frequently Asked Questions (FAQs)
23	Annual shareholders' meeting agenda and notice
24	Text of speeches and presentations
25	News summaries
26	Press releases
27	Displays names and details of Sharia committee
28	If personal information is required, privacy policy is explained
29	Quarterly reports of current year
30	Quarterly reports of past years
31	Semi-annual report of current year
32	Semi-annual report of past years
33	Annual report of current year (full text)
34	Annual report of last year (full text)
35	Annual report of three years ago (full text)
36	Balance sheet of current year
37	Balance sheet of last year
38	Income statement of current year
39	Income statement of last year
40	Cash flow statement of current year
41	Cash flow statement of last year
42	Statement of changes in stockholders' equity of current year
43	Statement of changes in stockholders' equity of last year
44	Notes to financial statements of current year
45	Notes to financial statements of last year
46	Management Report/Analysis of current year
47	Management Report/Analysis of last year

48	Supplement or amendment to current year annual report
49	The date of financial year end
50	Historical share prices
51	Share price performance in relation to stock market index
52	There is a facility to compare company share prices with peers and industry leaders
53	Displaying names and details of analysts following company
54	Dividend payout policy
55	Dividend history
56	Excerpts of financial reports or statements
57	Usage of comparative figures
58	Which GAAP basis is used in the year reported
59	Displays financial information in alternative GAAP
60	Disclosure of risk or risk management
61	Earnings per share/Earning release
62	Summary of key financial ratios
63	Market share of key products
64	Monthly or weekly sale or operating data
65	Earnings or sales forecast
66	Industry statistics or data
67	Performance analysis
68	Contains link to Tadawul database
69	An exchange or link to currency converter site if financial information is presented in alternative currencies
70	Social media links

	Presentation items
1	Multilingual of home page
2	English language Web pages.
3	Arabic language Web pages.
4	Hyperlinks inside the annual report.
5	Annual report in PDF-format.
6	Annual report in html-format.
7	Reports in XLS Format.
8	Reports in XML.
9	Clear direction for annual report.
10	Graphic images/ Graphic images exist
11	Use video files in the annual report.
12	Use audio files in the annual report.
13	Use flash files in the annual report
14	Financial data in processible format
15	Hyperlinked table of contents
16	Hyperlinks to data on a third-party's website
17	Direct e-mail to investor relations
18	Dynamic graphic images
19	Conference calls.
20	Use of frames/ Page divided into frames
21	Clear boundaries for annual reports.
22	Displays financial information in alternative currencies
23	Provides slide presentations [PDF/ PPT]
24	File format of the audit report in PDF

25	The auditor's report in English
26	Auditor's report in Arabic

Timeliness	
1	Is the date of the last web site update provided
2	Is the latest (i.e. today's) share price disclosed
3	Is the specific update time for the share price data disclosed
4	Does the company provide a calendar of future financial events
5	Does the company provides feature to register for future email, social media alerts regarding press releases, newsletters, etc.
6	For email or online requests, is the user told when to expect a response to their question
7	Does the company provide webcasts
8	Is the most recent interim financial report provided on the web site
9	Does the company provide a quarterly interim report
10	Current press releases or news (up to date)
11	Hints for finding current information directly
12	Current key financial ratios
13	Current financial highlights and summaries
14	Current dividends announcements
15	There is a link to the share price on the Tadawul (or other SEs)
16	There is a link to a calendar on Tadawul (Or other SEs)
17	There is a link to the online regulatory news service (e.g. regular/ad hoc announcements /notifications, stock exchange announcements, press releases)
18	The updating dates are obviously disclosed
Usability	
1	Link to annual report on home page
2	Help site
3	Pull-down menu
4	Internal search box
5	Site Map
6	Table of contents
7	User feedback or contact us
8	Next/previous/top buttons to navigate sequentially
9	One click to get to investor relations or financial information
10	One click to get to press releases or news/ link to press releases from Home page
11	Change in printing friendly format possible (Text-only)
12	Ability to download information
13	Privacy statement is provided
14	Legal statement is provided
15	Financial or investor glossary
16	External links (other than Tadawul)
17	Online investor information order services
18	The website in all languages working effectively
19	Avoid making the user scroll to get important navigation or submit buttons
20	Have a language menu or change language option on the home page
21	There is a link to social responsibility section from home page
22	Link to Corporate governance section from home page
23	Link to Investor Frequently Asked Questions (FAQs) from Home page or IR page
24	Provides separate print version for any long page.
25	There are different colour graph lines, for the comparison in the chart

26	Other disability aids such as zooming font
27	Spelling checker embedded in the search engine which gives list of clickable possible correct spelling
28	Common natural language of company name is used in URL address (URL short, simple name)
29	Name or logo of company easy to Spot on Website
30	Page not wider than screen (no horizontal scrolling required)
31	Uses standard font sizes.
32	Text stands still (no moving, blinking or zooming required)
33	Search facility available on every page in Website
34	Hyperlinks change colours to distinguish between visited and unvisited links
35	High contrast between foreground and background colours utilized to aid colour-blind users
36	Consistent use of arrows such as having some control scrolling, while others expand and collapse lists
37	Navigation area positioned on right/top side of screen (for Arabic web site).
38	Navigation area positioned on left/ top side of screen (for English web site).
39	Provides table of contents or link page at beginning of annual reports, or alphabetical index, including notes to financial statements
40	Each page in annual report links back to main table of contents from each page.
41	Easy for users to find audit report (e.g. listed in a table of contents/menu)
42	Visibility of directors and executive details
43	Visibility of names and details of sharia committee
44	Visibility of Investor Relations contact details in highly visible area of Investor Relations section
45	Visibility of dividend history
46	Visibility of interactive stock chart
47	Visibility of stock exchange(s) link
48	Visibility of Analysts' details
49	Visibility of site update
50	Displays audio clips / recorded speeches from shareholder meetings or press conferences.
51	Screen displays presentation's length and / or user's current progress toward completing web cast.
52	For large PDF files, Website offers option to download document in smaller sections (more than 1 MB)
53	For each PDF document provides gateway page that gives summary description of content and file size
54	Information that enables Muslims to determine the amount of zakat
	Audit items
1	The name of the external auditor
2	Publishing details on the website about the external auditor
3	Auditor report of current year
4	Auditor report of last year
5	Auditor scanned signature/ seal of current year report
6	Auditor scanned signature/ seal of last year report
7	Displays audited financial statements accompanied by audit report
8	Links to the external auditor's Website
9	Links from the auditor's report to the company's home
10	Links from the auditor's report to the company's financial statements
11	Links from the auditor's report to the company's other web pages
12	Direct link to auditor's report from the company's home page or other Webpages

13	Warning users when leaving audited pages/An intermediate warning message is displayed when entering / leaving the audited annual report
14	The auditor's report is available on-line all the time
15	Audit firm logo is placed in the audit report
16	Audited financial statements are distinguished from non-audited statements
17	Audit report on the website is complete
18	Indication on the company's website if it is audited by one of the Big4 audit firms
19	Charters for the audit committee
20	Names of the members of the audit committee and/ or qualifications
21	Note on language translation and audit
22	Audit report highlights which GAAP (Accounting standards) is used
23	Audit report highlights which GAAS (Auditing standards) is used
24	Audit report's background and /or use of borders consistent with those used in the audited financial statements
25	Hyperlink(s) from / to the audited financial statements to external unaudited websites or sections of the company website are avoided
26	The interim reports accompanied by auditor limited report
27	Each page of the audited financial in (HTML)statements clearly labeled as "AUDITED" or Audited Financial statements.
28	The auditor's report is dated.

Appendix 7: Correlation coefficients

Pearson Correlations

Pearson Correlation	C Total	C content	C Presentation	C timeliness	C usability	C Audit
C Total	1					
C content	.984***					
C presentation	.899***	.859***				
C timeliness	.822***	.787***	.682***			
C usability	.854***	.791***	.765***	.755***		
C Audit	.913***	.900***	.813***	.628***	.643***	1

Spearman's rho Correlation

	C Total	C content	C Presentation	C timeliness	C usability	C Audit
C Total	1.000					
C content	.959***					
C Presentation	.856***	.784***				
C timeliness	.860***	.807***	.680***			
C usability	.892***	.799***	.781***	.744***		
C Audit	.784***	.791***	.623***	.643***	.589***	1.000

***. Correlation is significant at the 0.01 level (2-tailed).

**. Correlation is significant at the 0.05 level (2-tailed).

Appendix 8: The findings of the extent of CIR content

	content item	no	percent
1	Date company established	168	0.99
2	Company profile	168	0.99
3	Vision statement	134	0.79
4	Mailing list of the company's key personnel	12	0.07
5	Phone number for investors.	164	0.96
6	Postal address for investors.	159	0.94
7	Human resources information/ employee profile (names, qualifications…)	154	0.91
8	Corporate citizenship	167	0.98
9	Statement of management responsibility	82	0.48
10	There is a social responsibility section and/or environmental section	95	0.56
11	The existence of investor relations section	143	0.84
12	Name of Investor Relations Officer	30	0.18
13	Discussing on product quality and safety	112	0.66
14	Certificate of quality assurance (ISO)or awards of best practice)	116	0.68
15	Donations/sponsoring to community groups	75	0.44
16	Chairman's message/letter to shareholders	83	0.49
17	Services or products provided.	167	0.98
18	Sales of key products.	105	0.62
19	Market outlook	31	0.18
20	Advertisements for their products or services	152	0.89
21	Promotional items (i.e., t-shirts)	37	0.22
22	Investor Frequently Asked Questions (FAQs)	54	0.32
23	Annual shareholders' meeting agenda and notice	115	0.68
24	Text of speeches and presentations	2	0.01
25	News summaries	157	0.92
26	Press releases.	56	0.33
27	Displays names and details of Sharia committee	25	0.15
28	If personal information is required, privacy policy is explained	3	0.02
29	Quarterly reports of current year	97	0.57
30	Quarterly reports of past years	97	0.57
31	Semi-annual report of current year.	101	0.59
32	Semi-annual report of past years.	100	0.59
33	Annual report of current year (full text).	123	0.72
34	Annual report of last year (full text).	119	0.70
35	Annual report of three years ago (full text).	112	0.66
36	Balance sheet of current year.	128	0.75
37	Balance sheet of last year.	129	0.76

38	Income statement of current year.	129	0.76
39	Income statement of last year.	129	0.76
40	Cash flow statement of current year.	121	0.71
41	Cash flow statement of last year.	122	0.72
42	Statement of changes in stockholders' equity of current year	119	0.70
43	Statement of changes in stockholders' equity of last year	120	0.71
44	Notes to financial statements of current year.	118	0.69
45	Notes to financial statements of last year.	117	0.69
46	Management Report/Analysis of current year.	113	0.66
47	Management Report/Analysis of last year.	105	0.62
48	Supplement or amendment to current year annual report.	117	0.69
49	The date of financial year end.	140	0.82
50	Historical share prices.	42	0.25
51	Share price performance in relation to stock market index.	38	0.22
52	There is a facility to compare company share prices with peers and industry	13	0.08
53	Displays names and details of analysts following company	5	0.03
54	Dividend payout policy	129	0.76
55	Dividend history	25	0.15
56	Excerpts of financial reports or statements.	130	0.76
57	Usage of comparative figures.	133	0.78
58	Which GAAP basis is used in the year reported.	132	0.78
59	Displays financial information in alternative GAAP	0	0.00
60	Disclosure of risk or risk management.	134	0.79
61	Earnings per share/ Earning release	134	0.79
62	Summary of key financial ratios	119	0.70
63	Market share of key products.	11	0.06
64	Monthly or weekly sale or operating data.	1	0.0059
65	Earnings or sales forecast	1	0.0059
66	Industry statistics or data	10	0.06
67	Performance analysis	125	0.74
68	Contains link to Tadawul database	87	0.51
69	Exchange or link to currency converter site if information in alternative currencies	1	0.0059
70	Social media links	110	0.65

Appendix 9: The findings of the extent of CIR presentation

	Presentation item	no	percent
1	Multilanguage of home page	151	0.89
2	English language Web pages	159	0.94
3	Arabic language Web pages	162	0.95
4	Hyperlinks inside the annual report.	29	0.17
5	Annual report in PDF-format.	134	0.79
6	Annual report in html-format.	17	0.10
7	Reports in XLS Format.	1	0.006
8	Reports in XML.	0	0.00
9	Clear direction for annual report.	138	0.81
10	Graphic images/ Graphic images exist	114	0.67
11	Use video files in the annual report.	0	0.00
12	Use audio files in the annual report.	0	0.00
13	Use flash files in the annual report/ Flashes (moving pictures)	1	0.006
14	Financial data in other processible format	1	0.006
15	Hyperlinked table of contents	169	0.99
16	Hyperlinks to data on a third-party's website	134	0.79
17	Direct e-mail to investor relations	66	0.39
18	Dynamic graphic images	33	0.19
19	Conference calls.	1	0.01
20	Use of frames/ Page divided into frames	168	0.99
21	Clear boundaries for annual reports.	140	0.82
22	Displays financial information in alternative currencies	5	0.03
23	Provides slide presentations [PDF/ PPT]	10	0.06
24	File format of the audit report in PDF	129	0.76
25	The auditor's report in English	82	0.48
26	Auditor's report in Arabic	129	0.76

Appendix 10: The findings of the extent of CIR timeliness

	Timeliness item	no	percent
1	Is the date of the last web site update provided	136	0.80
2	Is the latest share price disclosed	46	0.27
3	Is the specific update time for the share price data disclosed	39	0.23
4	Does the company provide a calendar of future financial events	32	0.19
5	Does the company provides feature to register for future email/ social media alerts	112	0.66
6	For email or online requests, is the user told when to expect a response	11	0.06
7	Does the company provide webcasts	0	0.00
8	Is the most recent interim financial report provided on the web site	93	0.55
9	Does the company provide a quarterly interim report	105	0.62
10	Current press releases or news (up to date)	127	0.75
11	Hints for finding current information directly	126	0.74
12	Current key financial ratios	105	0.62
13	Current financial highlight and summaries	116	0.68
14	Current dividends announcements	72	0.42
15	There is a link to the share price on the Tadawul (or other SEs)	72	0.42
16	There is a link to a calendar on Tadawul (or other SEs)	10	0.06
17	There is a link to the online regulatory news service	34	0.20
18	The updating dates are obviously disclosed	76	0.45

Appendix 11: The findings of the extent of CIR usability

	Usability item	no	percent
1	Link to annual report on home page	134	78.8%
2	Help site	14	8.2%
3	Pull-down menu	119	70.0%
4	Internal search box	108	63.5%
5	Site Map	86	50.6%
6	Table of contents	161	94.7%
7	User feedback or contact us	169	99.4%
8	Next/previous/top buttons to navigate sequentially	96	56.5%
9	One click to get to investor relations or financial information	152	89.4%
10	One click /Link to press releases from Home page	157	92.4%
11	Change in printing friendly format possible (Text-only)	29	17.1%
12	Ability to download information	152	89.4%
13	Privacy statement is provided	86	50.6%
14	Legal statement is provided	84	49.4%
15	Financial glossary/ investor glossary	17	10.0%
16	External links (other than Tadawul)	125	73.5%
17	Online investor information order services	76	44.7%
18	The website in all languages working effectively	140	82.4%
19	Avoid making the user scroll to get important navigation or submit buttons	150	88.2%
20	Have a language menu or change language option on the home page	153	90.0%
21	There is a link to social responsibility section from home page	57	33.5%
22	Link to Corporate governance section from home page	44	25.9%
23	Link to Investor Frequently Asked Questions (FAQs) from Home page or IR	47	27.6%
24	Provides separate print version for any long page.	107	62.9%
25	There are different colour graph lines, for the comparison in the chart	92	54.1%
26	Other disability aids such as zooming font	13	7.6%
27	Spelling checker embedded in the search engine	12	7.1%
28	Common natural language of company name is used in URL address	170	100.0%
29	Name or logo of company easy to Spot on Website	169	99.4%
30	Page not wider than screen (no horizontal scrolling required)	170	100.0%
31	Uses standard font sizes.	168	98.8%
32	Text stands still (no moving, blinking or zooming required)	170	100.0%
33	Search facility available on every page in Website	99	58.2%
34	Hyperlinks change colors to distinguish between visited and unvisited links	5	2.9%
35	High contrast between foreground and background colours utilized	168	98.8%
36	Consistent use of arrows such as having some control scrolling	170	100.0%
37	Navigation area positioned on right/top side of screen (for Arabic web site).	161	94.7%
38	Navigation area positioned on left/ top side of screen (for English web site).	156	91.8%

39	Provides table of contents or link page at beginning of annual reports	110	64.7%
40	Each page in annual report links back to main table of contents	0	0.0%
41	Easy for users to find audit report (e.g. listed in a table of contents/menu)	117	68.8%
42	Visibility of directors and executive details	149	87.6%
43	Visibility of names and details of sharia committee	25	14.7%
44	Visibility of Investor Relations contact details in highly visible area of IR section	69	40.6%
45	Visibility of dividend history	23	13.5%
46	Visibility of interactive stock chart	26	15.3%
47	Visibility of stock exchange(s) link	53	31.2%
48	Visibility of Analysts' details	5	2.9%
49	Visibility of site update	133	78.2%
50	Displays audio clips / recorded speeches from shareholder meetings	3	1.8%
51	Screen displays presentation's length and current progress of web cast.	2	1.2%
52	For large PDF files, Website offers option to download document in smaller sections	1	0.6%
53	For PDF files provides gateway page that gives description of content and size	4	2.4%
54	Information that enables Muslims to determine the amount of zakat	135	79.4%

Appendix 12: The findings of the extent of CIR audit

	Audit item	no	percent
1	The name of the external auditor.	137	0.81
2	Publishing details on the website about the external auditor.	0	0.00
3	Auditor report of current year.	118	0.69
4	Auditor report of last year.	117	0.69
5	Auditor scanned signature/ seal of current year report.	114	0.67
6	Auditor scanned signature/ seal of last year report.	114	0.67
7	Displays audited financial statements accompanied by audit report	129	0.76
8	Links to the external auditor's Website.	13	0.08
9	Links from the auditor's report to the company's home.	0	0.00
10	Links from the auditor's report to the company's financial statements.	0	0.00
11	Links from the auditor's report to the company's other web pages.	0	0.00
12	Direct link to auditor's report from the company's home page or other Webpages.	4	0.02
13	Warning users when leaving audited pages/An intermediate warning message is displayed when entering / leaving the audited annual report	2	0.01
14	The auditor's report is available on-line all the time.	127	0.75
15	Audit firm logo is placed in the audit report.	128	0.75
16	Audited financial statements are distinguished from non-audited statements.	125	0.74
17	Audit report on the website is complete.	125	0.74
18	Indication on the company's website if it is audited by one of the Big4 audit firms.	0	0.00
19	Charters for the audit committee	128	0.75
20	Names of the audit committee members / Qualifications of the members of the audit committee	123	0.72
21	Note on language translation and audit.	2	0.01
22	Audit report highlights which GAAP (Accounting standards) is used	132	0.78
23	Audit report highlights which GAAS (Auditing standards) is used	131	0.77
24	Audit report's background and /or use of borders consistent with those used in the audited financial statements	131	0.77
25	Hyperlink(s) from / to the audited financial statements to external unaudited websites or sections of the company website are avoided	121	0.71
26	The interim reports accompanied by auditor limited report	104	0.61
27	Each page of the audited financial in (HTML)statements clearly labeled as "AUDITED" or Audited Financial statements.	0	0.00
28	The auditor's report is dated.	130	0.76

Appendix 13: The histogram and Q.Q P.P plot of the variables

Histogram

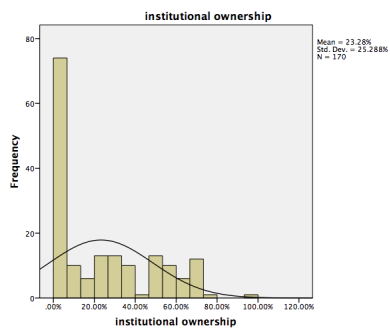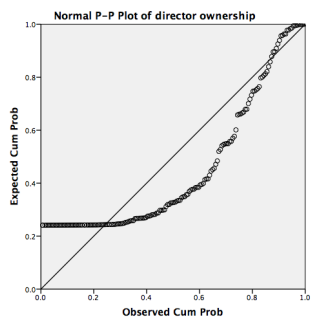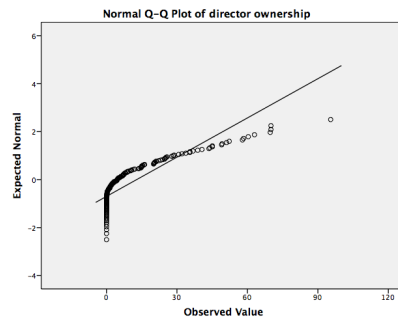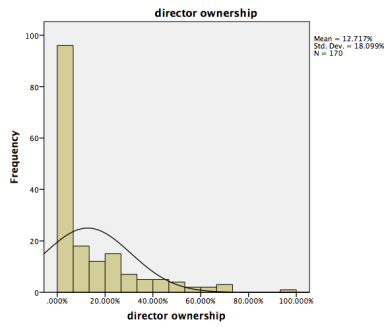Dependent Variable: C TOTAL SCORE

Mean = 6.69E−16
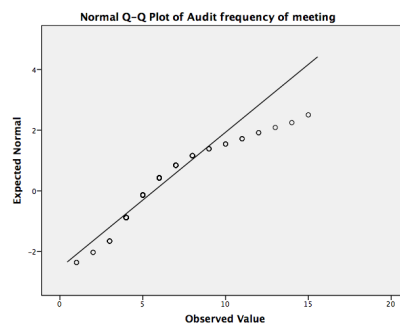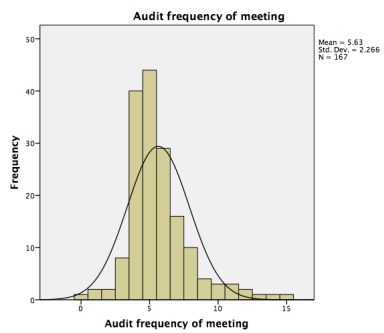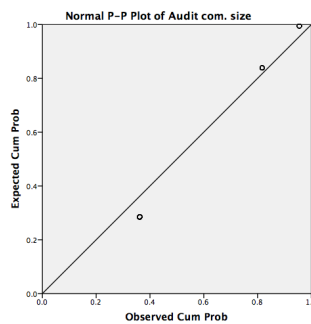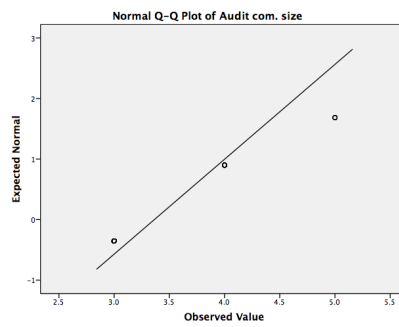Std. Dev. = 0.942
N = 162

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: C TOTAL SCORE

Scatterplot
Dependent Variable: C TOTAL SCORE

BOARD SIZE

Mean = 8.43
Std. Dev. = 1.503
N = 170

Normal Q-Q Plot of BOARD SIZE

Normal P-P Plot of BOARD SIZE

BOARD INDEPENDENCE

Mean = 49.66%
Std. Dev. = 16.935%
N = 170

Normal Q-Q Plot of BOARD INDEPENDENCE

Normal P-P Plot of BOARD INDEPENDENCE

Board frequency of meeting

Mean = 5.4
Std. Dev. = 2.184
N = 167

Normal Q-Q Plot of Board frequency of meeting

Normal P-P Plot of Board frequency of meeting

Blockholder ownership

Mean = 37.46%
Std. Dev. = 26.095%
N = 170

Normal Q-Q Plot of Blockholder ownership

Normal P-P Plot of Blockholder ownership

301

director ownership

Normal Q-Q Plot of director ownership

Normal P-P Plot of director ownership

institutional ownership

Normal Q-Q Plot of institutional ownership

Normal P-P Plot of institutional ownership

Government ownership

Mean = 7.48%
Std. Dev. = 16.869%
N = 170

Normal Q-Q Plot of Government ownership

Normal P-P Plot of Government ownership

Audit com. size

Mean = 3.36
Std. Dev. = .641
N = 170

Normal Q-Q Plot of Audit com. size

Normal P-P Plot of Audit com. size

Audit frequency of meeting

Mean = 5.63
Std. Dev. = 2.266
N = 167

Normal Q-Q Plot of Audit frequency of meeting

Normal P-P Plot of Audit frequency of meeting

Audit committee independence

Mean = 77.22%
Std. Dev. = 21.51%
N = 170

Normal Q-Q Plot of Audit committee independence

Normal P-P Plot of Audit committee independence

Firm size(log of Assets)

Mean = 6.374
Std. Dev. = .810
N = 170

Normal Q-Q Plot of Firm size(log of Assets)

Normal P-P Plot of Firm size(log of Assets)

Firm growth

Mean = .217
Std. Dev. = .815
N = 165

Normal Q–Q Plot of Firm growth

Normal P–P Plot of Firm growth

Leverage

Mean = .474
Std. Dev. = .273
N = 170

Normal Q–Q Plot of Leverage

Normal P–P Plot of Leverage

Liquidity

Mean = 3.20
Std. Dev. = 10.074
N = 170

Normal Q–Q Plot of Liquidity

305

Normal P-P Plot of Liquidity

C TOTAL SCORE

Mean = .516
Std. Dev. = .159
N = 170

Normal Q-Q Plot of C TOTAL SCORE

Normal P-P Plot of C TOTAL SCORE

Appendix 14: Outliers

Casewise Diagnostics [a]

Case Number	Std. Residual	C Total	Predicted Value	Residual
30	-2.183	.240	.51195	-.271947
42	-2.197	.210	.48364	-.273636
66	-2.707	.200	.53719	-.337194
113	2.003	.700	.45054	.249461
163	-2.204	.150	.42457	-.274565
168	-2.716	.290	.62830	-.338299

a. Dependent Variable: C Total

Case Summaries

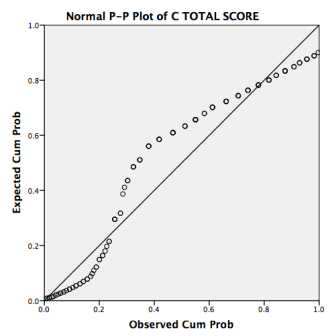|	Case Number	Mahalanobis Distance	Cook's Distance	Centered Leverage Value
1	1	18.77419	.00008	.11661
2	2	15.85169	.00024	.09846
3	3	35.31673	.00002	.21936
4	4	15.86288	.00728	.09853
5	5	14.34705	.00164	.08911
6	6	15.95241	.00375	.09908
7	7	20.33991	.00721	.12633
8	8	22.77751	.00095	.14148
9	9	21.80888	.00265	.13546
10	10	25.61797	.00101	.15912
11	11	13.63217	.00013	.08467
12	12	29.52997	.00253	.18342
13	13	10.16769	.00439	.06315
14	15	18.73076	.00753	.11634
15	16	23.84080	.00696	.14808
16	17	23.26469	.00284	.14450
17	18	9.08555	.00002	.05643
18	19	13.44276	.01209	.08350
19	20	9.06897	.00452	.05633
20	21	12.49245	.00151	.07759
21	22	14.93336	.00099	.09275
22	23	13.19959	.01237	.08199
23	24	13.39636	.00117	.08321
24	25	17.74495	.00646	.11022
25	26	8.34163	.00003	.05181
26	27	14.92295	.01088	.09269

27	28	23.63219	.02144	.14678
28	29	10.68475	.00263	.06636
29	30	16.07221	.03328	.09983
30	31	51.98573	.04858	.32289
31	32	15.06596	.00341	.09358
32	33	45.18851	.01887	.28067
33	34	9.87541	.00728	.06134
34	35	24.22808	.01824	.15048
35	36	10.43141	.00810	.06479
36	37	27.88840	.02830	.17322
37	38	10.74906	.00203	.06676
38	39	10.62590	.00118	.06600
39	40	14.02455	.00283	.08711
40	41	22.93452	.00469	.14245
41	42	7.41088	.01476	.04603
42	43	12.11417	.00000	.07524
43	44	11.28356	.00808	.07008
44	45	13.48387	.00276	.08375
45	46	10.83633	.00079	.06731
46	47	13.47881	.00161	.08372
47	48	12.67863	.00735	.07875
48	49	15.53063	.00064	.09646
49	50	39.42849	.00976	.24490
50	51	23.25099	.00002	.14442
51	52	10.95658	.00001	.06805
52	53	11.64735	.00005	.07234
53	54	10.39662	.00137	.06458
54	55	10.39617	.00315	.06457
55	56	10.49952	.00286	.06521
56	57	12.47929	.00066	.07751
57	58	12.38008	.00000	.07689
58	59	12.48028	.00066	.07752
59	60	9.14077	.00007	.05677
60	61	20.42219	.00236	.12685
61	62	21.91246	.00054	.13610
62	64	25.34535	.00169	.15742
63	65	15.38184	.00185	.09554
64	66	13.64708	.04245	.08476
65	68	7.57839	.00001	.04707
66	69	15.42846	.00080	.09583
67	70	17.49822	.00090	.10868
68	71	24.01631	.00217	.14917
69	72	26.68002	.02315	.16571

70	73	12.87642	.00000	.07998
71	74	12.52473	.00010	.07779
72	75	10.58979	.01217	.06578
73	76	10.23283	.00001	.06356
74	77	6.70583	.00048	.04165
75	78	12.95562	.01444	.08047
76	79	12.71074	.00784	.07895
77	80	8.96039	.00082	.05565
78	81	15.91284	.00472	.09884
79	82	21.31940	.00243	.13242
80	83	18.75033	.00324	.11646
81	85	7.37527	.00209	.04581
82	86	12.29157	.00448	.07635
83	87	27.51616	.01664	.17091
84	88	10.16623	.00463	.06314
85	89	7.26133	.00490	.04510
86	90	18.79300	.00041	.11673
87	91	15.87303	.00028	.09859
88	92	23.78819	.01467	.14775
89	93	26.31676	.00069	.16346
90	94	12.23761	.00067	.07601
91	95	32.76618	.03242	.20352
92	96	14.54628	.00212	.09035
93	97	11.51844	.00210	.07154
94	98	14.37300	.00271	.08927
95	99	11.77617	.00255	.07314
96	100	10.99340	.00007	.06828
97	101	11.65187	.00105	.07237
98	102	10.89275	.00725	.06766
99	103	15.54057	.01375	.09653
100	104	13.43342	.01919	.08344
101	105	26.63822	.00784	.16545
102	106	18.85929	.00770	.11714
103	107	12.58840	.00055	.07819
104	108	11.38756	.00089	.07073
105	109	43.57144	.01342	.27063
106	110	9.48098	.00002	.05889
107	111	15.54991	.00053	.09658
108	112	28.35166	.00036	.17610
109	113	17.63079	.03123	.10951
110	116	15.45692	.00477	.09601
111	117	8.26427	.00269	.05133
112	118	12.71070	.00145	.07895

113	119	15.85666	.01969	.09849
114	120	11.96154	.00848	.07430
115	121	15.47315	.00293	.09611
116	122	7.99169	.00066	.04964
117	123	10.96884	.00687	.06813
118	124	14.44204	.01448	.08970
119	125	37.71088	.00141	.23423
120	126	18.06960	.00068	.11223
121	127	9.61035	.00187	.05969
122	128	13.27194	.00289	.08243
123	129	12.29043	.00706	.07634
124	130	8.28029	.00193	.05143
125	131	10.38951	.00069	.06453
126	132	5.56416	.00031	.03456
127	133	11.28127	.01404	.07007
128	134	7.99585	.00050	.04966
129	135	6.63097	.00301	.04119
130	136	12.53198	.00001	.07784
131	137	20.45917	.00085	.12708
132	138	7.58728	.00537	.04713
133	139	6.54390	.00529	.04065
134	140	16.72639	.00747	.10389
135	141	8.52905	.00506	.05298
136	142	10.51505	.00296	.06531
137	143	54.01446	.05069	.33549
138	144	16.77560	.01249	.10420
139	145	12.03082	.00732	.07473
140	147	56.70379	.05890	.35220
141	148	9.79924	.00396	.06086
142	149	24.46971	.01176	.15199
143	150	22.18558	.01156	.13780
144	151	14.60344	.00502	.09070
145	152	21.26635	.00790	.13209
146	153	30.18910	.00406	.18751
147	154	54.22224	.02653	.33678
148	155	7.43791	.00163	.04620
149	157	9.29258	.00229	.05772
150	158	19.99227	.02597	.12418
151	159	29.54374	.00394	.18350
152	160	14.07769	.00001	.08744
153	161	34.28057	.00000	.21292
154	162	41.90976	.01972	.26031
155	163	52.77047	.19253	.32777

156		164	20.02704	.00128	.12439
157		165	28.68992	.00000	.17820
158		166	22.69106	.00963	.14094
159		167	18.18123	.00107	.11293
160		168	45.57759	.22235	.28309
161		169	18.35212	.00012	.11399
162		170	51.47956	.00236	.31975

**Appendix 15: Bivariate analysis between CIR components and continuous variables**

Variables	Pearson Correlation					Spearman's rho				
	Presentation	timeliness	usability	Audit	content	presentation	timeliness	usability	audit	content
Firm size	.572***	.551***	.612***	.442***	.549***	.620***	.573***	.582***	.478***	.616***
Firm growth	-.084	-.040	-.002	-.100	-.028	-.031	.023	.021	.024	.014
Leverage	.169**	.060	.248***	.143*	.149*	.187**	.089	.220***	.171**	.164**
Liquidity	-.253***	-.155**	-.247***	-.195**	-.228***	-.010	.020	-.066	-.061	-.060
Board size	.376***	.303***	.351***	.340***	.374***	.347***	.286***	.293***	.226***	.340***
Board independence	-.175**	-.232***	-.179**	-.146*	-.184**	-.212***	-.234***	-.165**	-.223***	-.218***
Board frequency of meeting	-.074	-.059	-.011	-.060	-.059	-.099	-.116	-.078	-.123	-.060
Block holder ownership	.127	.182**	.185**	.105	.168**	.141*	.195**	.154**	.190**	.220***
Director ownership	-.041	.046	-.011	-.008	.027	-.076	.056	-.004	-.085	-.011
Institutional ownership	-.040	.037	-.036	.040	.036	-.033	.053	-.031	.152**	.064
Government ownership	.208***	.198***	.314***	.099	.183**	.343***	.327***	.397***	.206***	.405***
Audit committee size	.283***	.236***	.333***	.197***	.272***	.302***	.224***	.307***	.196***	.336***
Audit frequency of meeting	-.086	-.056	.004	-.096	-.037	-.073	-.046	-.035	-.053	.004
Audit committee independence	-.301***	-.195**	-.242***	-.339***	-.320***	-.302***	-.223***	-.241***	-.323***	-.331***

Appendix 16: The histogram and Q.Q P.P plot of Tobin's Q ratio, ROA and ROE
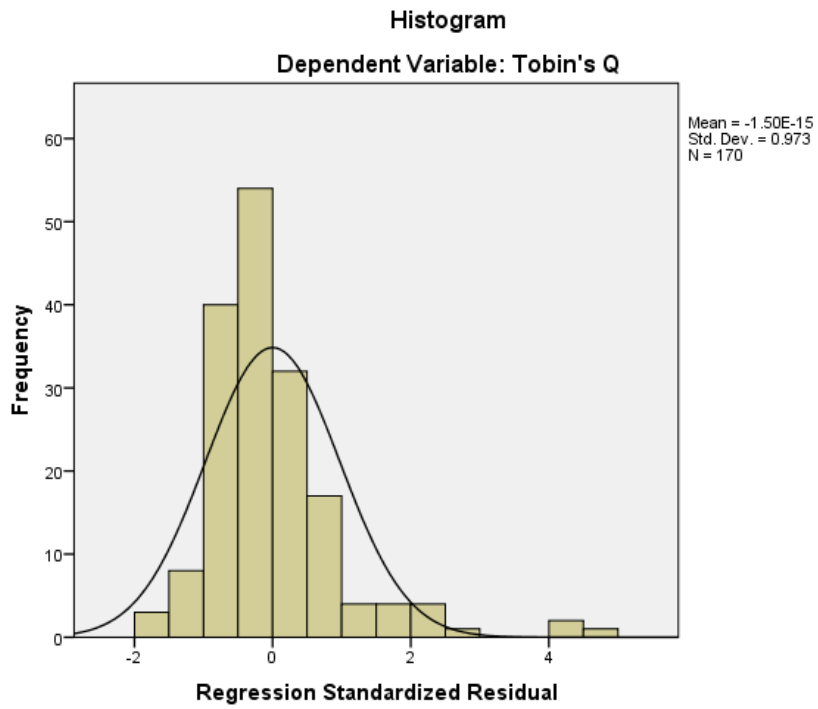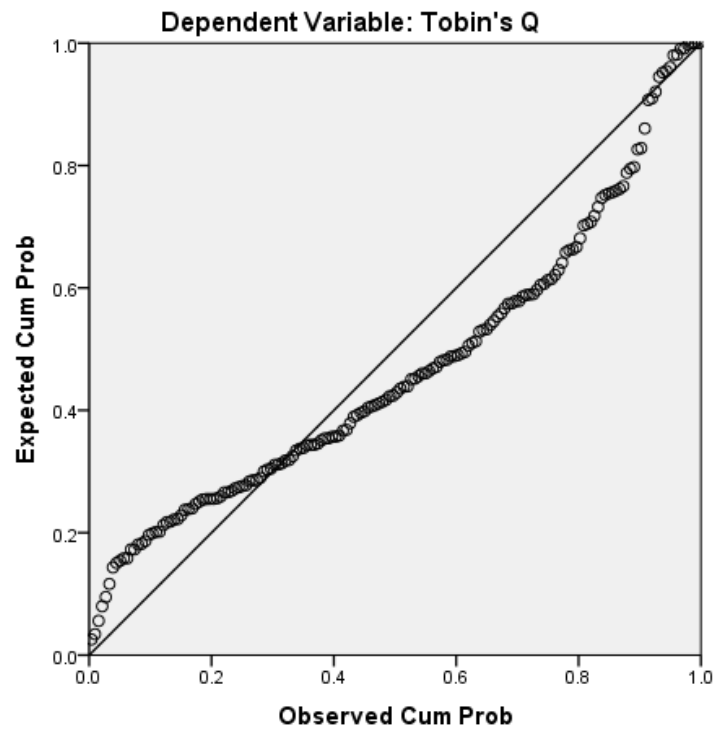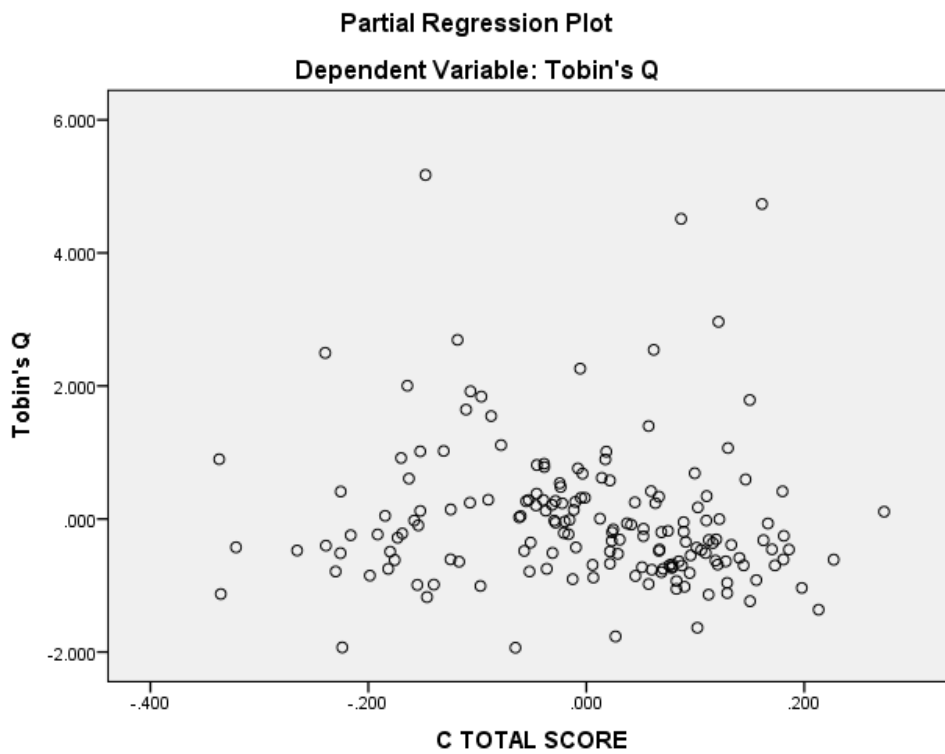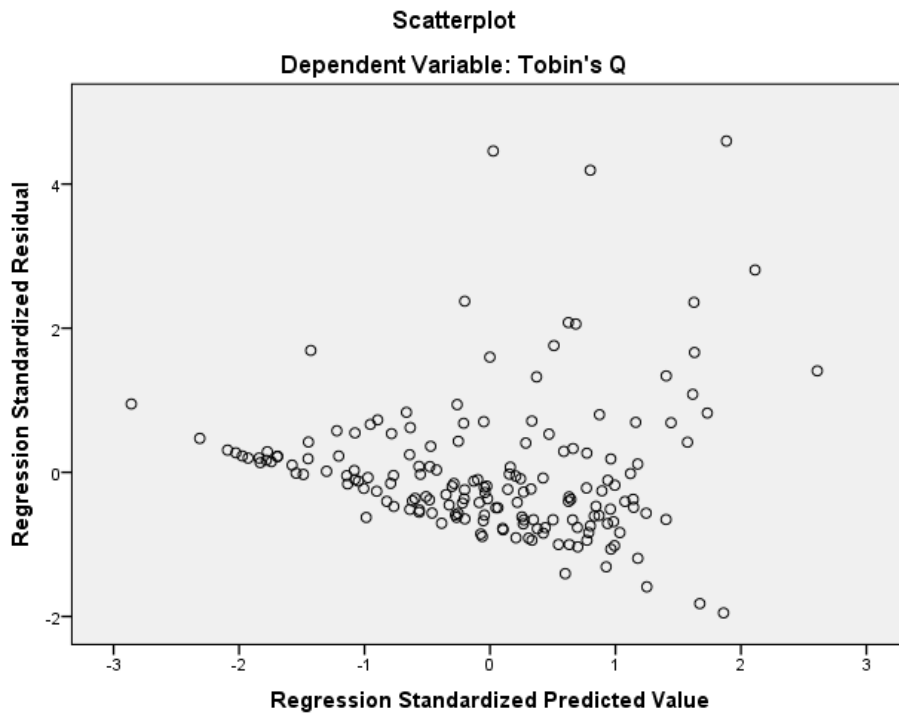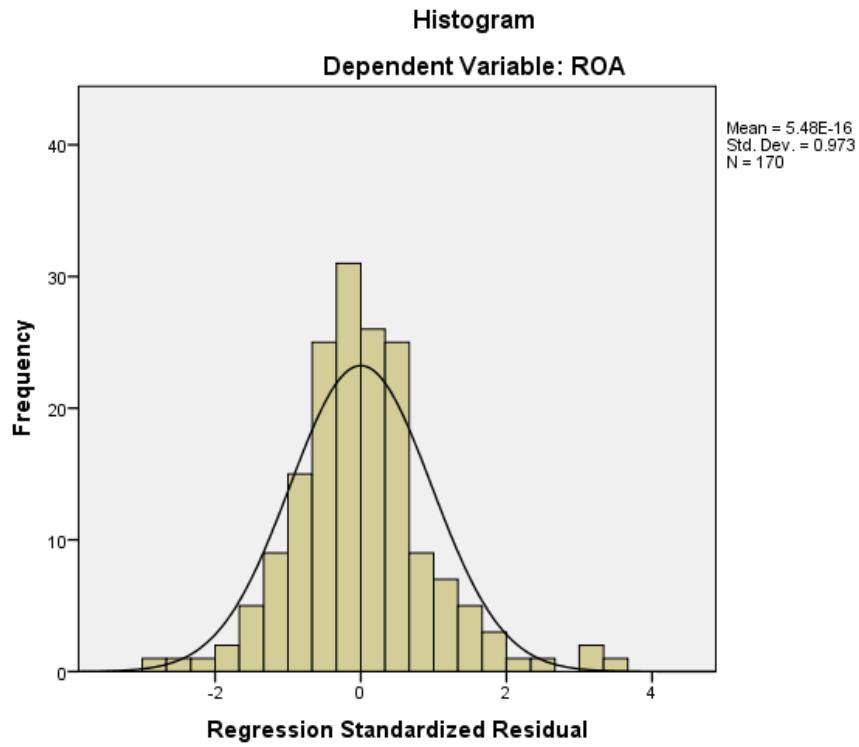
Histogram
Dependent Variable: Tobin's Q

Mean = -1.50E-15
Std. Dev. = 0.973
N = 170
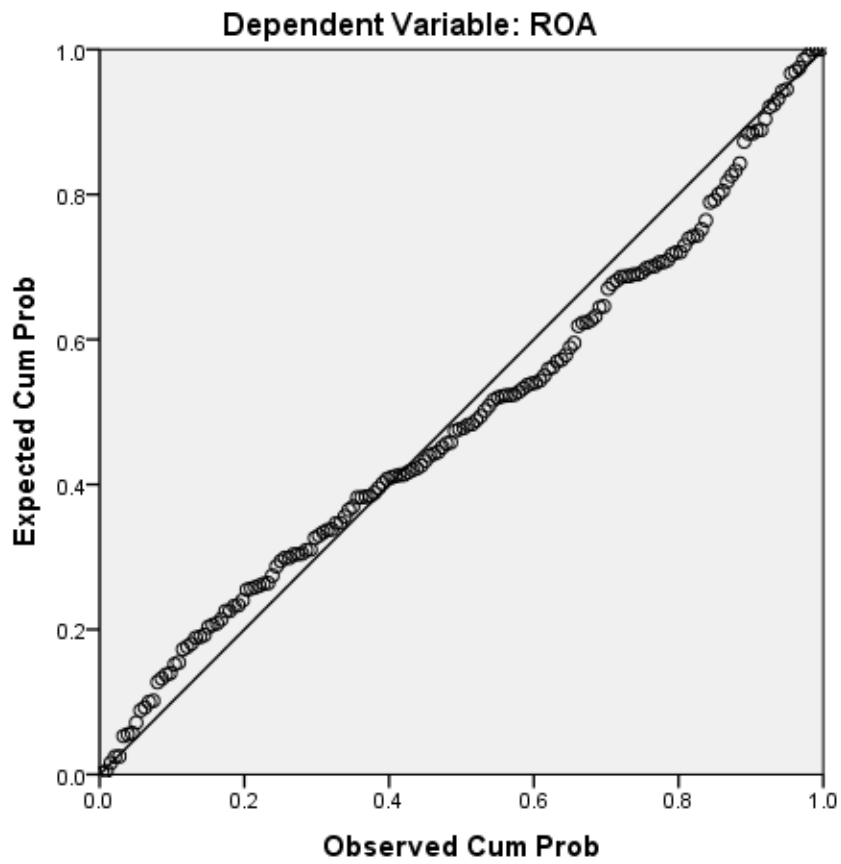

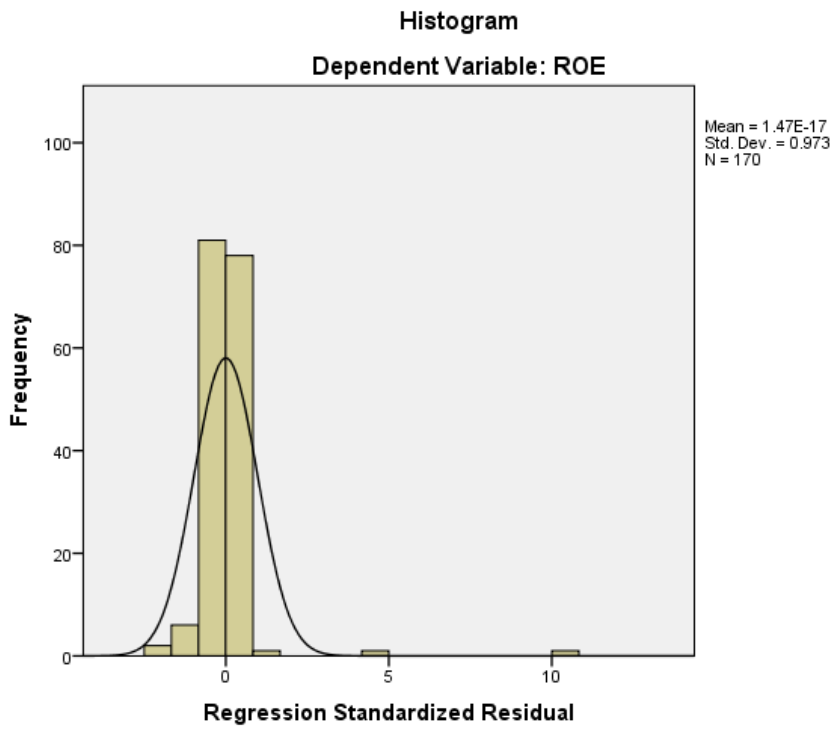Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Tobin's Q

Scatterplot
Dependent Variable: Tobin's Q

Partial Regression Plot
Dependent Variable: Tobin's Q

Histogram
Dependent Variable: ROA

Mean = 5.48E-16
Std. Dev. = 0.973
N = 170

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: ROA

Scatterplot

Dependent Variable: ROA

Histogram

Dependent Variable: ROE

Mean = 1.47E-17
Std. Dev. = 0.973
N = 170
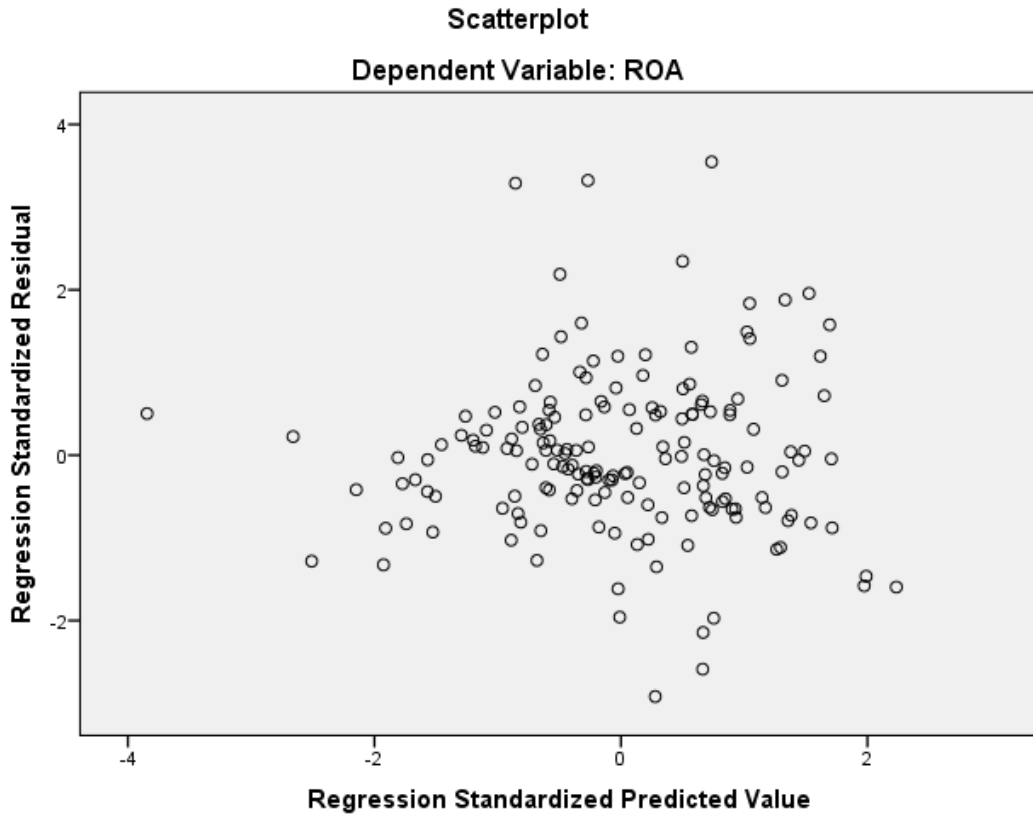
Normal P-P Plot of Regression Standardized Residual

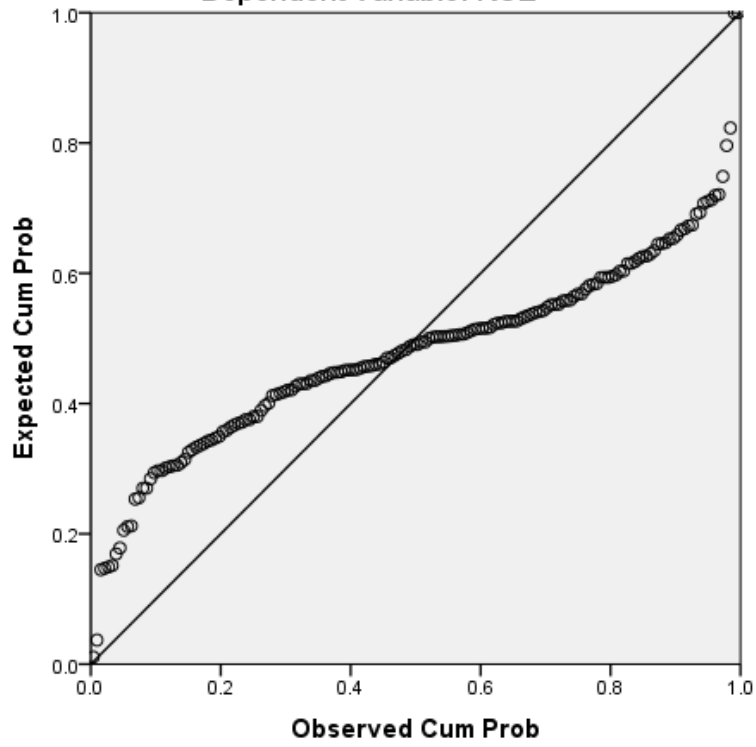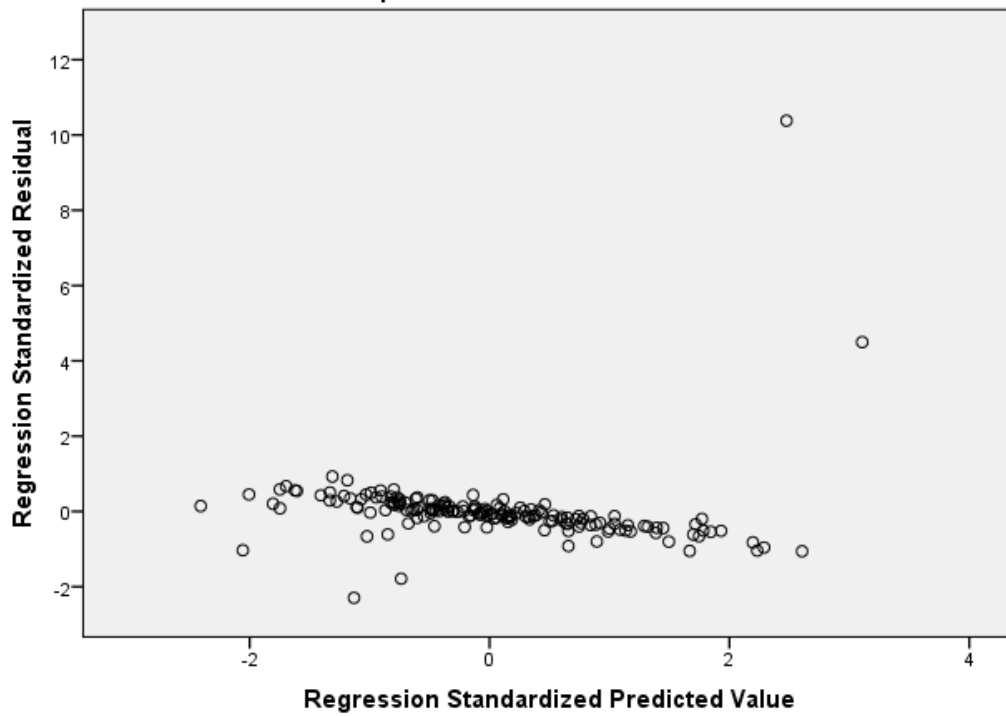Dependent Variable: ROE

Scatterplot

Dependent Variable: ROE

Appendix 17: the correlation matrix for Tobin's Q ratio, ROA and ROE

Pearson Correlation	Tobin's Q	C total	Firm size	Leverage	board size	board independence	role duality	Block holder ownership	director ownership	Audit committee independence
Tobin's Q	1.000									
C total	-.348***	1.000								
Firm size	-.435***	.583***	1.000							
Leverage	-.293***	.168**	.288***	1.000						
Board size	-.214***	.386***	.403***	.180***	1.000					
Board independence	.034	-.193***	-.214***	-.153**	-.130**	1.000				
Role duality	-.055	.041	.017	-.143**	.062	.046	1.000			
Block holder ownership	-.010	.167**	.300***	.235***	.214***	-.508***	-.023	1.000		
director ownership	-.007	.011	-.027	-.135**	.092	-.108*	.033	.242***	1.000	
Audit committee independence	.176**	-.321***	-.245***	-.089	-.192***	.354***	.064	-.117*	-.021	1.000