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The effect of board of directors and audit committee effectiveness on internet financial reporting: Evidence from gulf co-operation council countries

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Abstract

Purpose – The purpose of this paper is to examine the effect of board of directors and audit committee effectiveness on the level of internet financial reporting (IFR) disclosure practices.

Design/methodology/approach – The sample consists of 152 listed financial companies in Gulf Cooperation Council (GCC) countries. Based on agency theory, the authors posit that board of directors and audit committee effectiveness influence corporate IFR disclosure practice. Content analysis approach, based on an un-weighted index of 35 IFR items is used to measure the level of IFR disclosure. Thus, multiple regression analysis is utilized to analyse the results of this paper.

Findings – The results show that board of directors and audit committee effectiveness has significant influence on the level of IFR disclosure.

Research limitations/implications – One potential limitation of this paper is that the sample is drawn only from the GCC listed financial companies. Therefore, the findings cannot be generalized to other than the financial institutions.

Practical implications – The finding(s) highlights the importance of board of directors and audit committee characteristics in corporate governance and in the development of financial markets that foster IFR disclosure.

Originality/value – This paper extends previous IFR disclosure studies by considering both the role of board of directors and audit committee effectiveness score in examining IFR disclosure.

Keywords Board of directors, Internet financial reporting, Effectiveness, Audit committee, GCC listed financial companies

Paper type Research paper

1. Introduction

There is an increasing number of ways internet technology is being used. The internet is a unique information disclosure tool that provides information instantaneously to a global audience (Abdelsalam *et al.*, 2007), discloses up-date information to increase efficiency and effectiveness (Kelton and Yang, 2008), reduces information asymmetry (Cormier *et al.*, 2012; Puspitaningrum and Atmini, 2012), and enhances accessibility and/or flexibility of usage of information (Ojah and Mokoaleli-Mokoteli, 2012). In the context of financial reporting, the internet facilitates the improved availability of financial information and encourages investment (Aly *et al.*, 2010), promotes a higher level of transparency compared to the traditional form of annual reports (Ali-Khan *et al.*, 2013), and thereby influences the investors' decision making process (Hodge, 2001).

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Despite the advantages of the internet as a preferred means of corporate communication, internet financial reporting (IFR) practices are generally voluntary and unregulated (Dutta and Bose, 2007). Due to that, IFR disclosure policies remain at the discretion of managers (Kelton and Yang, 2008), raising concerns about the reliability of the disclosed information for outsiders (Botti *et al.*, 2014). Given the prevalence of IFR in communicating financial reports, more research is needed to better understand the dynamics of why some firms engage in voluntary IFR whilst others do not (Oyelere and Kuruppu, 2012).

In this study, we posit that differences in the level of IFR disclosure practices between countries and companies arise because of the differences in corporate governance practices (Bartulović and Pervan, 2012; Botti *et al.*, 2014). Corporate governance represents a set of implemented mechanisms that are intended to make sure that managers act in the best interest of shareholders and thereby force managers to disclose important information to minimize the information asymmetry between the managers and shareholders (Siagian *et al.*, 2013). The role of governance mechanisms in determining disclosure policy may be either complementary or substitutive (Ho and Wong, 2001) and aims to ensure a governance system works within an organization (Puspitaningrum and Atmini, 2012). Consequently, good corporate governance mechanisms can influence companies to disclose additional voluntary IFR to their shareholders.

Most prior studies in corporate governance examine the key characteristics of board of directors and audit committees, rather than their effectiveness. The characteristics commonly examined are size, independence, duality and meeting (Xiao *et al.*, 2004; Abdelsalam *et al.*, 2007; Abdelsalam and El-Masry, 2008; Kelton and Yang, 2008; Arussi *et al.*, 2009; Kiew-Heong *et al.*, 2011; Ojah and Mokoaleli-Mokoteli, 2012; Puspitaningrum and Atmini, 2012). However, more recent studies demonstrate the importance of considering interactions among governance characteristics when investigating governance as a determinant of financial reporting (Baber *et al.*, 2012). These studies recognize that corporate governance mechanisms may serve as complements or as substitutes for one another (Brown and Caylor, 2006; Connelly *et al.*, 2012). Therefore, we extend the corporate governance literature by developing composite scores of corporate governance characteristics to measure the board of directors and audit committee effectiveness. Furthermore, we extend studies on IFR disclosure by examining the effect of board of directors and audit committee effectiveness on IFR disclosure. Our sample consists of financial companies listed in Gulf Cooperation Council (GCC) countries, for which the internet start was somewhat slow but has gained more widespread use lately (Alqudsi-ghabra *et al.*, 2011). Hence, we contribute to the literature by examining the issue of corporate governance and IFR in the emerging economies in GCC countries.

To explore information sharing practices and to test the hypotheses of this study, a regression model is constructed using multivariate analysis for a sample of 152 GCC listed financial companies for 2012. The descriptive results show that the average IFR disclosure score is 58 per cent. Results of the regression analysis show that board of directors and audit committee effectiveness have significant influence on the level of IFR disclosure of the GCC listed financial companies.

The remainder of the study is structured as follows. Section 2 provides the literature review, while hypotheses development is outlined in Section 3. Section 4 discusses the research methodology and Sections 5 and 6 present the finding and robustness tests. Section 7 concludes the paper.

2. Literature review

A number of studies around the world examine IFR practices. These studies are divided into two main categories: descriptive research and explanatory research (Marston and Polei, 2004; Abdelsalam *et al.*, 2007; Garg and Verma, 2010). Studies that provide descriptive analyses highlighted the state of IFR disclosure (e.g. Lymer and Debreceny, 2003; Marston, 2003; Mohamed *et al.*, 2009; Aziz *et al.*, 2011; Bozcuk *et al.*, 2011). In the Gulf Region, a few studies that examined IFR practices among the listed companies mainly focus on data from a single country (e.g. Al-Shammari, 2007; Alanezi, 2009; Al-Moghaiwli, 2009; Mohamed *et al.*, 2009; Mohamed, 2010). For example, Oyelere and Kuruppu (2012) examined corporate internet reporting by 132 companies listed on the two stock exchanges in the United Arab Emirates (UAE). They found that only 88 (67 per cent) of these companies use their websites to communicate financial information. They indicated that IFR is still at an embryonic stage in the UAE and that there are considerable opportunities and challenges for all stakeholders in corporate communication and reporting.

There are also studies that have linked IFR with the dimensions of corporate governance, such as board of directors, audit committee, and ownership structure (e.g. Xiao *et al.*, 2004; Abdelsalam *et al.*, 2007; Alanezi, 2009; Arussi *et al.*, 2009; Ezat and El-Masry, 2008; Kelton and Yang, 2008; Kiew-Heong *et al.*, 2011; Ojah and Mokoaleli-Mokoteli, 2012). Abdelsalam *et al.* (2007) examined the association between the comprehensiveness of corporate internet reporting (CIR) disclosures and corporate governance factors for a sample of 110 London-listed companies. Their results indicated that there is an association between the comprehensiveness of CIR with analyst following, director holding, director independence, and CEO duality. In examining the most active 50 Egyptian listed companies' websites, Ezat and El-Masry (2008) found a significant relationship between IFR timeliness and size, composition of the board of commissioner, and ownership structure. Using a sample of 284 US companies listed on NASDAQ, Kelton and Yang (2008) found that companies with weak shareholder rights, a higher percentage of independent directors, a lower percentage of block holder ownership, a more diligent audit committee, and an audit committee with higher percentage of financial experts are more likely to engage in IFR disclosure. Kiew-Heong *et al.* (2011) found that small size, more independent, competent, and diligent boards are likely to enhance internal governance and influence IFR practice in Malaysian companies. Puspitaningrum and Atmini (2012) showed that audit committee meeting frequencies positively influence the extent of IFR disclosure of 420 Indonesian companies. In addition, Ojah and Mokoaleli-Mokoteli (2012) found that corporate governance structure, physical and institutional infrastructures are important determinants of a country's adoption of IFR for their sample companies from 44 developed and developing countries. More recently, Botti *et al.* (2014) used a sample of 32 French listed companies to shed light on the role of boards of directors in improving IFR disclosure quality. The empirical findings showed that only 28 per cent of their sample firms are completely efficient, indicating that boards of directors seem to effectively monitor the top executives of these firms, which improves their disclosure decisions, including that of increasing the IFR level.

In sum, results from prior studies suggest that corporate governance demands of information, in both content detail and speed of delivery, are important in determining the adoption of IFR (Ojah and Mokoaleli-Mokoteli, 2012). However, their findings are mixed and inconclusive, which may, in part, be explained by the likely interrelationship of governance attributes (Fallatah, 2012) that are not considered in those studies. In general, the majority of previous studies on IFR disclosure rely on agency theory to examine a firm's characteristics, including several corporate governance characteristics, as determinants of IFR disclosure. While these studies have important contributions, there is a need to consider the fact that corporate governance mechanisms are an interrelated system and become effective only in particular combinations rather than isolated best practices (Aguilera *et al.*, 2008). Investigating overall corporate governance mechanisms gives a stronger effect of measurement than just examining them individually (O'Sullivan *et al.*, 2007). Accordingly, researchers in corporate governance studies have begun to use composite indexes to assess governance practices, recognizing that corporate governance mechanisms may serve as complements or as substitutes for one another (Brown and Caylor, 2006; Baber *et al.*, 2012; Connelly *et al.*, 2012).

Hence, more related to this paper are disclosure studies that rely on composite scoring of corporate governance characteristics as a measure of corporate governance effectiveness. In developing the composite score, the line of reasoning used in these studies is that firms with better quality corporate governance characteristics are those with more effective governance. Chobpichien *et al.* (2008) developed an index to measure the quality of the board of directors (i.e. the quality of a board's leadership structure, composition, meetings, controlling system, committees, audit committee, and remuneration committee) in order to examine the effect of corporate governance on the level of voluntary disclosure of listed companies in Thailand. Their results indicate that improved quality of the board of directors leads to more voluntary disclosure practices. Ishak and Al-Ebel (2013) used the board effectiveness score to investigate intellectual capital (IC) disclosure. They found that the score of board of directors' effectiveness is significantly related to IC disclosure. In addition, Al-Akra and Ali (2012) developed a governance index from six mechanisms including board independence, audit committees, board size, role duality, audit firm, and foreign investors. Their results showed a positive and significant association between governance index and voluntary disclosures of privatized Jordanian firms. In short, these disclosure studies provide empirical evidence on the positive effect of corporate governance effectiveness that is represented by aggregate measures of corporate governance characteristics. Yet, to the authors' knowledge, no study has yet explored the impact of corporate governance effectiveness on IFR disclosure in emerging countries such as those in the GCC.

3. Hypotheses development

The main objective of this study is to examine whether the effectiveness of corporate governance mechanisms are associated with IFR practices. Agency theory is closely related to corporate governance (Puspitaningrum and Atmini, 2012) and provides a framework that relates corporate governance with disclosure (Ho and Wong, 2001). Consistent with the predictions of agency theory, prior studies have examined the influence of corporate governance mechanisms on the level of IFR disclosure (Abdelsalam *et al.*, 2007; Kelton and Yang, 2008). In this study, corporate governance mechanisms that are examined are board of directors and audit committee effectiveness.

Jensen (1993) argued that the quality of board monitoring can alter managerial incentives towards firm disclosure. Indeed, a board of directors is an internal prominent corporate governance mechanism that plays the key monitoring role in dealing with agency conflicts by exercising its power to monitor and control management (Akhtaruddin *et al.*, 2009). Botti *et al.* (2014) contended that since the IFR voluntary disclosure practices are mainly unregulated, they are likely to depend on the quality of board monitoring. It has been argued that board members have the time, skills, and experiences that are important in explaining effective board governance (Cornforth, 2001). Another major corporate governance mechanism is the audit committee, which is viewed as the central internal control mechanism that helps to control agency problems between managers and outside investors (Akhtaruddin and Haron, 2010). An audit committee plays an important role in reducing information asymmetry and improving disclosure quality (Chung *et al.*, 2004). Through its monitoring function, an effective audit committee encourages the management team to produce financial information on a more timely basis (Ika and Ghazali, 2012). Puspitaningrum and Atmini (2012) proposed that audit committee members must have financial literacy in order to function effectively. An audit committee whose members are more financially literate, have better expertise, and more independent has higher quality and can remediate internal control problems more likely in a timely manner (Goh, 2009).

Prior studies on disclosure have empirically linked IFR with board of directors and audit committee characteristics. The board of directors characteristics examined in these studies include the proportion of independent non-executive directors and CEO duality (Xiao *et al.*, 2004; Abdelsalam and Street, 2007; Kelton and Yang, 2008), board size, competency, meeting frequency (Kiew-Heong *et al.*, 2011), and financial experts on the board (Thangatorai *et al.*, 2011). Audit committee characteristics include the audit committee meeting frequency and financial expertise (Kelton and Yang, 2008; Puspitaningrum and Atmini, 2012), and audit committee size and independence (Kiew-Heong *et al.*, 2011). These studies investigate the attributes of corporate governance mechanisms individually and find corporate governance to be associated with IFR. While these prior studies have proven that individual key characteristics of the board of directors and audit committee explain the ability to execute the monitoring functions, a better research approach is to look at corporate mechanisms as a bundle because these mechanisms act in a complementary or substitutable fashion (Ward *et al.*, 2009) in reducing the agency problem and protecting shareholder interests. Accordingly, unlike existing IFR studies that focussed on individual characteristics of corporate governance, the current study aims to examine the variation in IFR disclosures by using composite scores that represent boards of directors and audit committee effectiveness.

With regards to composite score of corporate governance as reflecting corporate governance effectiveness, Kiew-Heong *et al.* (2011) argued that internal corporate governance structures are strong when a company adopts best governance practices. Additionally, Baber *et al.* (2012) demonstrated the importance of considering interactions among governance characteristics when investigating governance as a determinant of financial reporting quality. Prior disclosure studies, which rely on aggregate measure of corporate governance characteristics, highlight the positive effect of corporate governance effectiveness (e.g. Chobpichien *et al.*, 2008; Al-Akra and Ali, 2012; Ishak and Al-Ebel, 2013). Based on the view that firms with better quality corporate governance characteristics are those with more effective governance, we explore the impact of corporate governance effectiveness on IFR disclosure in the emerging countries of the GCC. For board of directors, the key factors that determine its quality are board independence, size, meeting frequency, and duality of the chairman/chief executive officer (Goh, 2009). For audit committee, independence and expertise of its members (Chung *et al.*, 2004) and frequent meetings (Saleh *et al.*, 2007) are among the important factors for its effectiveness. Based on the above arguments, the testable hypotheses are as follows:

H1. There is a positive association between the board of directors' effectiveness and the level of IFR.

H2. There is a positive association between the audit committee effectiveness and the level of IFR.

4. Research methodology

4.1 Sample

The sample in this study is financial companies from the GCC countries, namely: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and, the UAE. These countries share some common economic, cultural, and political similarities, which far outweigh any differences they might have (Al-Muharrami *et al.*, 2006; Alqudsi-ghabra *et al.*, 2011). Financial companies are selected based on the special relevance of the financial sectors for the economy of the GCC. The financial sector is one of the most economically viable diversification options. It is the second highest contributor to the country's GDP after the oil and gas sector and is dominated by the banking sector, which remains the cornerstone of the non-oil GDP growth in the economies of the GCC countries (Al-Obaidan, 2008; Al-Hassan *et al.*, 2010).

Secondary data method is employed to gather relevant data for the year 2012. Data for the dependent variable were obtained from the company's website while the data for independent variables were obtained from the annual reports of the sample companies. Referring to Table I, the sample initially includes the entire 243 financial companies listed on the stock exchanges of the six member states of the GCC countries. However, 91 out of the 243 companies are excluded from the sample because their websites are inaccessible, under construction, or due to incomplete corporate governance data. All Kuwaiti listed companies are excluded from the sample due to missing relevant information, especially with regard to variables related to corporate governance. The final sample consists of 152 companies. They include 21 companies from Bahrain, 26 companies from Oman, 15 companies from Qatar, 43 companies from Saudi Arabia, and 47 companies from the UAE.

4.2 Measurement of variables

4.2.1 Dependent variables. This study uses three dependent variables, namely: IFR total score, content, and presentation. A disclosure index is developed to evaluate the extent of IFR in the websites of the 152 companies. There are 35 items used to measure the total score of IFR disclosure (IFRT). The remaining two measures are content that consist of 19 items (IFRC), and presentation format that consist of 16 items (IFRP). These two measures are important to be used to investigate whether GCC companies' websites are focussed on publishing financial and non financial information to stakeholders as is available in a traditional paper-based disclosure (Lybaert, 2002; Xiao *et al.*, 2004) or on providing unique presentation tools that enhance and increase

Sample attributes	Bahrain	Kuwait	Oman	Qatar	KSA	UAE	Total
Total number of financial companies listed in the GCC	23	70	30	17	44	59	243
Less							
Companies without website addresses							(0)
Companies with under construction websites		(2)					(2)
Companies with inaccessible websites			(3)				(3)
Companies with incomplete corporate governance data	(2)	(68)	(1)	(2)	(1)	(12)	(86)
Final sample	21	0	26	15	43	47	152

Notes: KSA = Saudi Arabia; UAE = United Arab Emirates

Table I. Composition of sample

the frequency of disclosed information (i.e. the degree of convenience of the website for the user) (Ashbaugh *et al.*, 1999; Xiao *et al.*, 2004; Andrikopoulos *et al.*, 2013). Generally, it has been claimed that companies, to enhance transparency, need to disclose information in multiple formats to make information useful, understandable, more accessible and valuable for users (Carey and Parker, 2006).

The index in this study is derived based on the attributes identified in previous studies (e.g. Xiao *et al.*, 2004; Kelton and Yang, 2008; Aly *et al.*, 2010; Al-Htaybat, 2011; Ali-Khan and Ismail, 2011). This study focusses more on studies that are more applicable to the environment of the GCC countries such as Desoky (2009), Aly *et al.* (2010), and Al-Htaybat (2011). The separation of content and presentation dimensions is the most popular, and is widely accepted and used by many studies (Xiao *et al.*, 2004; Kelton and Yang, 2008; Al-Htaybat, 2011; Ali-Khan and Ismail, 2011). Prior studies indicate that both the content and presentation format of internet disclosure can improve disclosure transparency.

Un-weighted checklists are constructed to measure the level of IFR of the financial companies listed in the GCC. A score of "1" is assigned for the presence and "0" for the absence of each item of content. Due to the criticisms of the weighted approach, this paper follows studies that use and support an un-weighted scoring approach (Abdelsalam *et al.*, 2007; Kelton and Yang, 2008). The total score for each company is measured as the percentage of the actual score awarded to the maximum possible score.

4.2.2 Explanatory variables. Applying the same reasoning as prior studies that use composite indices to assess governance practices (e.g. Brown and Caylor, 2006; Chen *et al.*, 2007; Al-Akra and Ali, 2012; Connelly *et al.*, 2012; Fallatah, 2012), composite governance scores are developed to measure the board of directors and audit committee effectiveness. A composite score is used based on the argument that corporate governance is an interrelated system and becomes effective only in particular combinations rather than isolated best practices (Aguilera *et al.*, 2008). Further, using a composite score is a better research approach since particular mechanism's effectiveness depends on other mechanisms (Ward *et al.*, 2009). Consequently, investigating corporate governance mechanisms as a bundle gives a stronger effect of measurement than just examining them individually (O'Sullivan *et al.*, 2007).

As there is no agreed theory to guide researchers in verifying elements of corporate governance quality measures (Brown *et al.*, 2011), the effectiveness scores are developed by using the characteristics of board of directors and audit committees. Details of the measurement of board of directors and audit committee effectiveness are shown in Table II below. The boards of directors' characteristics include board size, independence, meetings, and board committees. The audit committee characteristics include the audit committee size, independence, financial expertise, and meetings. The selection of these four characteristics is justified by the availability of the data since corporate governance is a relatively new concept to companies and investors in GCC countries (Hubbard and Wood, 2013). The selected characteristics are also previously used to construct indices of corporate governance quality in prior studies (e.g. Brown and Caylor, 2006; Chen *et al.*, 2007; O'Sullivan *et al.*, 2007; Ward *et al.*, 2009; Al-Akra and Ali, 2012; Connelly *et al.*, 2012; Fallatah, 2012).

To construct the board of directors and audit committee effectiveness variables, we closely follow the approach in prior studies such as Brown and Caylor (2006), O'Sullivan *et al.* (2007), and Ward *et al.* (2009). A score of the board of directors and audit committee characteristics was summed to construct a company-specific composite measure of board of directors and audit committee effectiveness.

Board of directors' effectiveness	BRDEFFECT is ranging from "0-1" with a higher score indicating a higher effectiveness of the board directors
Board size	Coded "1" if the average number of members on the board is less than the sample median and "0" otherwise
Board independence	Coded "1" if the average proportion of outside directors on the board is equal to or higher than the sample median and "0" otherwise
Board meetings	Coded "1" if the average of meeting numbers held by the board during the year 2012 is equal to or higher than the sample median and "0" otherwise
Board committee	Coded "1" if the company has three committees – nominating, audit and compensation and "0" otherwise
Audit committee effectiveness	ACEFFECT is ranging from "0-1" with a higher score indicating a higher effectiveness of the audit committee
AC size	Coded "1" if the average number of members on the audit is equal to or higher than the sample median and "0" otherwise
AC independence	Coded "1" if the average proportion of outside members on the committee is equal to or higher than the sample median and "0" otherwise
AC financial expertise	Coded "1" if the percentage of financial experts on the audit committee is equal to or higher than the sample median and "0" otherwise
AC meetings	Coded "1" if the average of meeting numbers held by the members during the year is equal to or higher than the sample median and "0" otherwise

Table II.
Measurements of board of directors and audit committee effectiveness

The score ranging from 0 to 4 is assigned for each variable. This score is calculated for each company on the basis of the ratio of the actual score of characteristics obtained by a company to the maximum score possible for that company, bounding by 0-1, with a higher score indicating a higher effectiveness of the board of directors and audit committees. The justification is that firms with better quality corporate governance characteristics are those with more effective governance. As depicted in Table II, a company is considered to have an effective board of directors if (relatively) the board size is smaller, has more proportion of outside directors, has more frequent meeting, and has three committees (nominating, audit, and compensation). Meanwhile, a company is considered to have an effective audit committee if (relatively) the audit committee size is larger, has more proportion of outside members, has more percentage of financial experts, and has more frequent meeting.

4.2.3 Control variables. We include control variables for firm size, profitability, leverage, and country. Following prior disclosure studies (e.g. Xiao *et al.*, 2004; Debreceny and Rahman, 2005; Abdelsalam *et al.*, 2007), we measure firm size, profitability, and leverage by the natural logarithm of the book value of the total firm assets, the return on assets (ROA), and the ratio of total debt to total assets, respectively. As for country variables, there are four dichotomous variables included in the model. Following Debreceny and Rahman (2005) and Bonsón and Escobar (2006), a value of "1" is given if the company belongs to that country and "0" otherwise.

4.3 Model development

This study builds three multiple regression models that are utilized to test the relationship between board of directors and audit committee effectiveness and all types of IFR disclosure. The following multivariate model is estimated:

$$\begin{aligned} \mathrm{DI(IFRT,\ IFRP,\ IFRC)} &= \alpha + \beta_1\,\mathrm{BRDEFFECT} + \beta_2\mathrm{ACEFFECT} + \beta_3\,\mathrm{FSIZE} \\ &\quad + \beta_4\,\mathrm{ROA} + \beta_5\,\mathrm{LEV} + \beta_6(\mathrm{COUNTRY1}) + \ldots\ldots + \beta_9(\mathrm{COUNTRY4}) + \varepsilon \qquad (1) \end{aligned}$$

where DI = disclosure index; IFRT = internet financial reporting total score; IFRP = internet financial reporting presentation; IFRC = internet financial reporting content; α = the intercept; BRDEFFECT = board of director effectiveness; ACEFFECT = audit committee effectiveness; FSIZE = firm size; ROA = profitability; LEV = leverage; $\text{COUNTRY}_{1\text{-}4}$ = dichotomous variable for country; $\beta_{1}\ldots_{9}$ = the coefficients of the independent variables; and ε – error term. In the above model, β_1 is the test coefficient for *H1* and β_2 for *H2*.

5. Finding and discussion

In this section, results of the analyses in this study are presented. We begin by describing the variables used in the analysis. Table III illustrates the statistics of the dependent, explanatory and control variables. We also perform tests to assess the reliability of the dependent variables. In Table IV, we present the statistics of the disclosure scores across countries for the purpose of understanding the variation in the value of the dependent variable. Table V presents the result of the internal consistency testing. We also include the results of the regression analysis, which is performed to test the hypothesis, in Table IV.

Table III presents the descriptive statistics of variables used in this study. The mean (median) score for IFRT is 0.58 (0.60). The lowest score of IFRT is 0.09, and the highest score is 0.91. These descriptive results are comparable to previous studies. For example, the average level of IFR disclosure of US companies is 54.91 per cent

Variables	Min.	Max.	Mean	Median	SD	Skew	Kurt
Dependent variables							
IFRT	0.090	0.910	0.582	0.600	0.198	−0.362	−0.728
IFRP	0.130	0.940	0.567	0.5600	0.187	0.049	−0.599
IFRC	0.050	0.950	0.596	0.680	0.256	−0.726	−0.717
Explanatory variables							
BRDEFFECT	0.250	1.000	0.650	0.750	0.212	0.016	−0.625
ACEFFECT	0.250	1.000	0.510	0.500	0.232	0.275	−0.675
Control variables							
FSIZE	6.880	11.000	8.863	8.510	0.977	0.499	−0.811
ROA	−0.100	0.100	0.025	0.021	0.033	−0.770	3.143
LEV	0.030	1.000	0.625	0.672	0.237	−0.782	−0.303

Notes: IFRT = internet financial reporting total score; IFRP = internet financial reporting presentation format; IFRC = internet financial reporting content; BRDEFFECT = Board of directors' effectiveness; ACEFFECT = audit committee effectiveness; FSIZE = firm size, ROA = profitability; LEV = leverage

Table III. Descriptive statistics of all variables

Country	*N*	Range	Min.	Max.	Mean	Median	SD	Varian
Bahrain	21	0.450	0.460	0.910	0.699	0.690	0.114	0.013
Oman	26	0.630	0.230	0.860	0.540	0.570	0.178	0.032
Qatar	15	0.310	0.600	0.910	0.767	0.770	0.103	0.011
Saudi Arabia	43	0.770	0.140	0.910	0.538	0.540	0.206	0.043
United Arab Emirates	47	0.820	0.090	0.910	0.535	0.540	0.202	0.041

Table IV. Descriptive statistics of the IFRT disclosure based on country of origin

(Marston and Polei, 2004); 66 per cent for companies in London Stock Exchange (Abdelsalam *et al.*, 2007); 51 per cent for Egyptian companies (Desoky, 2009), 56 and 65 per cent for Malaysian companies (Homayoun *et al.*, 2011; Ali-Khan and Ismail, 2011), respectively; and 70 per cent for Jordanian companies (Al-Htaybat, 2011). Based on the comparison, we can indicate that the IFR disclosure in the GCC listed financial companies is relatively lower than their counterparts in developed and developing countries. These results indicate that IFR disclosure in GCC is still at an embryonic stage, supporting the findings by Al-Moghaiwli (2009) in Qatar, Mohamed (2010) in Oman and Bahrain, Alshowaiman (2013) in Saudi Arabia and Oyelere and Kuruppu (2012), and Momany and Pillai (2013) in UAE.

Table III also shows the descriptive analyses for IFRP and IFRC. The mean (median) scores for the IFRP and IFRC are 0.567 (0.560) and 0.680 (0.680), respectively. These results indicate that there is some importance of using IFRP (presentation format) than IFRC (content) by GCC listed financial companies. As shown in Table III, the mean (median) values of board of directors' effectiveness (BRDEFFECT) are 0.65 (0.75), with a minimum value of 0.25 and a maximum value of 1.00. With respect to audit committee effectiveness (ACEFFECT), the mean (median) values are 0.51 (0.50) with a minimum score of 0.00 and a maximum score of 1.00. Furthermore, as shown in the last two columns of Table III, the data are normally distributed in this study as Skewness value is lower than 3 and Kurtosis test is lower than 10 (Kline, 2011).

Table IV reveals the extent of total score of financial information disclosed on the internet (IFRT) for each of the GCC countries. On the top of the list is Qatar which has the highest median disclosure score among the GCC countries: 0.770. The highest score among the sample in Qatar is 91 per cent and the lowest is 60 per cent. On average, companies in Qatar disclose 76.7 per cent of the 35 total items included in the IFR index. Among the GCC countries, Bahrain is the second on the list with median disclosure score of 0.690, followed by Oman with a median disclosure score of 0.570. Saudi Arabia is fourth on the list with a median disclosure score of 0.540. The country with the lowest score for disclosing information via the internet among the GCC countries is UAE, with a median disclosure score of 0.540. On average, companies in UAE disclose 53.5 per cent of the 35 items included in the IFR index. This observation indicates that there are variations in the total score of IFR disclosure among countries of the GCC. The variations in disclosure score could be explained by the significant disparity in the level of internet penetration among these countries (Alqudsi-ghabra *et al.*, 2011). Consequently, country classification is a potential factor affecting companies' decision to disseminate information on a website.

To further test whether country classification is a potential factor affecting companies' decision to disseminate information on the internet, we employ the Kruskal-Wallis tests. The results (untabulated) indicate that the company's country of origin influences the level of information provided. This result is in line with Bonsón and Escobar (2002) and Bartulović and Pervan (2012) who found that IFR disclosure is

Table V. Results for the internal consistency testing

IFR component	Number of items	Cronbach's α
IFRT	35	0.697
IFRP	16	0.951
IFRC	19	0.900

influenced by country of origin. Similarly, Debreceny and Rahman (2005) also found variations in the frequency of disclosures by countries.

Table V presents the Cronbach's α in order to assess the reliability. Hair *et al.* (2010) consider a value of 0.70 to be an acceptable level of Cronbach's α for assessing scale reliability. The results achieved from Table V show that Cronbach's coefficient α for IFRT, IFRP, and IFRC are 0.70, 0.95, and 0.90, respectively, indicating that all variables surpass the recommended Cronbach's α values.

Table VI presents the results of each regression analysis of the models (IFRT, IFRP and IFRC), respectively. The goodness of fit test shows an adjusted R^2 of 0.500, 0.375, and 0.446, respectively. These indicate that 51, 38 and 45 per cent of the variation in the dependent variables are explained by the explanatory variables of the model. The F-values of the models are of 18, 11, and 15, respectively, with significant level of $p < 0.000$. The values indicate that the models are well fit. The adjusted R^2 of the IFRT (1) regression is comparable to prior studies that used multiple regression analysis in analysing IFR. For example, Abdelsalam and Street (2007) have an R^2 of 48 per cent, Abdelsalam and El-Masry (2008) have an R^2 of 52 per cent and Aly *et al.* (2010) has an R^2 of 61 per cent.

Regarding the corporate governance variables, "BRDEFFECT" is identified as a significant positive indicator of the IFRT ($t = 2.982$, $p = 0.003$), IFRP ($t = 2.670$, $p = 0.008$), and IFRC ($t = 2.360$, $p = 0.020$). Consistent with expectations, the results in Table VI indicate that the board of directors' effectiveness is positive and significant at the 5 per cent level for IFRC and at the 1 per cent level for IFRT and IFRP. These results suggest that GCC listed companies with high effectiveness of board of directors are more likely to provide more information on their website than those with less effective board of directors. This result supports the expectation of the agency theory and is consistent with a study conducted by Ishak and Al-Ebel (2013) who reported that the board of directors effectiveness is associated with the level of IC disclosure. This result is also in line with Botti *et al.* (2014), who argue that boards of directors seem to effectively monitor the top executives of French firms, which improves their disclosure decisions, including that of increasing the IFR level. Consequently, the first hypothesis that there is a positive association between board of directors' effectiveness of GCC

Variables	IFRT (1) Coef.	*t*-test	Prob.	IFRP (2) Coef.	*t*-test	Prob.	IFRC (3) Coef.	*t*-test	Prob.
Constant		−3.160	0.002		−0.252	0.801		−4.116	0.000
Explanatory variables									
BRDEFFECT	0.194	2.982	0.003	0.194	2.670	0.008	0.162	2.360	0.020
ACEFFECT	0.153	2.264	0.025	0.137	1.813	0.072	0.138	1.948	0.053
Control variables									
FSIZE	0.411	5.167	0.000	0.258	2.904	0.004	0.426	5.090	0.000
ROA	−0.123	−2.021	0.045	−0.164	−2.404	0.018	−0.078	−1.209	0.228
LEV	0.018	0.252	0.801	0.073	0.915	0.362	−0.023	−0.302	0.763
Country variables					Included				
Adjusted R^2		0.500			0.375			0.446	
F-Value		17.758			11.075			14.519	
Significant		0.000			0.000			0.000	
Durbin-Watson		2.101			2.062			2.152	

Table VI.
Regression results

listed companies and that the IFR is accepted for all types of IFR disclosure. The role of the effective controlling and monitoring functions of the board of directors has impact on the demand for internet as media for disclosure in GCC countries.

Similarly, the multivariate analyses provides evidence that there is a positive significant relationship between audit committee effectiveness (ACEFFECT) and the IFRT ($t = 2.264$, $p = 0.025$), IFRP ($t = 1.813$, $p = 0.072$), and IFRC ($t = 1.984$, $p = 0.053$) at the 5 per cent level. The finding reveals that the greater the effectiveness of the GCC listed financial companies' audit committee, the higher the level of the IFR disclosure. Accordingly, the second hypothesis of a positive association between audit committee effectiveness and all types of IFR disclosure is accepted. Hence, it can be said that companies with effective governance mechanisms are more likely to be self-adapted to the internet as the media to disseminate related information to satisfy different stakeholders such as suppliers, customers, and creditors than companies with week governance. This result support the findings by Uyar (2012) who found that firms which are listed in the Istanbul Stock Exchange Corporate Governance Index (XCORP) disclose significantly more information on their corporate websites compared to the firms that are not listed in the XCORP. The results also suggest that more effective audit committees are likely to have a stronger influence on management and monitor the actions of management that lead to more IFR disclosure practices.

Regarding the control variables, there are four variables used in this study. The control variables included are firm size (FSIZE), profitability (ROA), leverage (LEV), and country. The results in Table VI indicate that firm size (FSIZE) has a significant positive relationship with the IFRT ($t = 5.167$, $p = 0.000$) as well as the IFRP ($t = 2.904$, $p = 0.004$) and IFRC ($t = 5.090$, $p = 0.000$). The findings reveal that GCC listed companies with a larger firm size are more likely to provide more information on their website than smaller ones. These results are consistent with agency theory, signalling theory, and cost-benefit analysis, suggesting that the larger companies are more likely to disclose more items than smaller companies. These results are also consistent with many empirical studies that found a positive association between internet disclosure and firm size (e.g. Xiao *et al.*, 2004; Kelton and Yang, 2008; Ghani and Said, 2010; Evans *et al.*, 2011; Alali and Romero, 2012; Agyei-Mensah, 2012; Puspitaningrum and Atmini, 2012).

Regarding the association between firm profitability (ROA) and the all the IFR measures, the multivariate analyses results indicate that there is a negative significant relationship between ROA and the IFRT ($t = -2.021$, $p = 0.045$) as well as IFRP ($t = -2.404$, $p = 0.018$). However, this study finds a negative but insignificant relationship between ROA and the IFRC ($t = -1.209$, $p = 0.228$). These results are contrary to the agency theory argument, which suggests that managers of profitable firms have greater incentives to disclose information on the website to achieve personal advantage. This result may be interpreted from the perspective of proprietary costs theory as higher profitability could spur rival companies to enter into the company's market (Álvarez *et al.*, 2008). Consequently, high-profitability companies may disclose less or not disclose information at all via the internet because it may affect their competitive position, especially within GCC countries as one of the emerging markets. Empirically, this finding is inconsistent with previous studies (Xiao *et al.*, 2004; Abdelsalam and Street, 2007; Kelton and Yang, 2008) that found an insignificant relationship between firm profitability and IFR disclosure.

With respect to the association between leverage (LEV) and the IFR disclosure, the multivariate analyses results indicate that there is an insignificant relationship between LEV and the IFRT ($t = 0.252$, $p = 0.801$) as well as the IFRP ($t = 0.915$, $p = 0.362$) and

IFRC ($t = -0.302$, $p = 0.763$). These results reveal that the leverage of GCC listed companies has no effect on all types of IFR disclosure. This result does not support the agency theory. However, the results are in line with many empirical studies that found insignificant association between leverage and IFR disclosure (Oyelere *et al.*, 2003; Marston and Polei, 2004; Laswad *et al.*, 2005; Aly *et al.*, 2010; Alali and Romero, 2012).

6. Robustness tests

Additional tests were conducted to check the robustness of the main results. First, we added additional control variables to the main regression models. More specifically, we included government ownership, family ownership, and internet penetration as control variable to give more evidence of whether or not these variables are affected the main results. Second, we employed alternative proxies for both the board of director and audit committee effectiveness. This strategy was applied because the results of examining corporate governance characteristics on accounting proxies are sensitive to how these characteristics are measured (Carcello *et al.*, 2011). Hence, using alternate measures can help in checking the robustness of the results (Haniffa and Hudaib, 2006). We use the dichotomous approach to measure both board of directors and audit committee effectiveness rather than the continuous approach that is used for the variables in the main regression results in Table VI. Third, we rely on an alternative variable to measure the strength of companies' governance practices and their impact on IFR disclosure. For this purpose, a variable called corporate governance effectiveness (CGEFFEC), which is developed by combining both board of director and audit committee effectiveness, is used as an explanatory variable in regression analysis. The results (untabulated) of these entire robustness tests provide evidence that our main results are robust to alternative specifications and measures. Consequently, the consistency in the results of the robustness test strengthens the validity of the findings and the recommendations drawn from them.

7. Conclusion

The present study is carried out with the purpose of examining whether board of directors and audit committee effectiveness are the determinants in influencing the variation in the level of IFR disclosure. We performed analysis on a sample of 152 financial companies publicly listed in the stock market of the GCC countries in 2012. Our focus on the GCC countries is motivated by the lack of empirical evidence in this particular region as opposed to the exhaustive evidence from the developed market in many of the prior IFR studies[1].

Based on multivariate analysis, the results support the research hypotheses, as the variables for board of director and audit committee effectiveness are significant in explaining IFR disclosure. These results indicate that the role of the effective controlling and monitoring functions of the board of directors and audit committee positively impact the use of internet as a medium for disclosure in GCC countries. In the light of the major challenges faced by the financial companies in the GCC (Chahine, 2007; Al-Obaidan, 2008) and the implementation of policies to stimulate financial liberalization and financial restructuring in the banking sector in the GCC (Maghyereh and Awartani, 2012), internet reporting emerges as an effective method of marketing a company to shareholders and investors (Dolinšek *et al.*, 2014). While internet reporting serves as a tool that can assist the GCC companies in expanding their activities and raising their capital internationally, our findings highlight the importance of corporate governance in IFR disclosure decisions. More specifically, we provide insights into the role of higher quality corporate governance, which is achieved via the effectiveness of a company's board of directors and audit committee, in ensuring better quality IFR disclosure.

Findings of this study provide empirical support to the agency theory, especially regarding the role of corporate governance in reducing information asymmetry through IFR disclosure. In an academic context, this study expands the scope of empirical literature in the field of financial reporting by focussing on the association between corporate governance and IFR disclosure in emerging markets. Our results are in line with theoretical justification for regulatory regime change in that the spirit of corporate governance principles and recommendations do seem to enhance transparency through the change of management's communication practices towards IFR disclosure. These findings implicate that effective corporate governance mechanisms are essential in promulgating communication practises that can realize transparency demands and protect investors' rights, especially in the context of emerging markets such as the GCC.

Additionally, our findings are expected to add value to companies and stock market participants. More specifically, we emphasize the importance of board of directors and audit committee characteristics in corporate governance and in the development of financial markets that foster IFR disclosure. For companies, this study highlights the role of corporate governance in ensuring better return from corporate investment in IFR. High-quality governance is necessary in reaping the full advantages of IFR disclosure, especially in attracting more local and foreign investors in a time when there is so much interest in investment opportunities in the region where rapid economic growth is fuelled by booming oil revenues. For stock market participants, our findings show that companies with high-quality governance are committed in providing timely and accurately relevant corporate information that can facilitate their decisional process. In an environment where investment professionals rely heavily on electronic and digital sources to find investment information, the quality of corporate governance would be one of the valuable factors to incorporate in making rational investment decisions using information from the internet.

It should be noted that this study is subject to several limitations. First, as this sample is drawn only from the GCC listed financial companies, the findings of this study may not be generalized to other than the financial institutions or other regions. Future research could consider a wide range of companies as a sample or extend this study to other emerging markets. Second, this study suffers from several measurement issues involving the development of the variables. In this study, an index is constructed to assess the extent of IFR disclosure for the sample companies in 2012. Therefore, results obtained are only valid to the extent of the IFR disclosure index used and time period investigated. In addition, the selection of the items included in the IFR disclosure index inevitably involved some degree of judgment and subjectivity. Although substantial efforts have been taken to diminish the subjectivity in determining the items of the index, there is no guarantee that the subjectivity has been removed entirely. Future research could extend the index in this study by examining a new set of information items. Third, some corporate governance factors, which may affect IFR disclosure, are excluded due to the limitations involving data accessibility, unavailability and/or weak transparency within the region. For example, we do not have data on the education level and the international experience of board of directors and audit committee, and information technology committee. Future research could consider other corporate governance attributes that can be more representative of the board of directors and audit committee effectiveness.

Note

1. The additional tests results are not reported here to save space, but they are available from the authors upon request.

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