

Murya S. Habbash

King Khalid University
Saudi Arabia

CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE, FINANCIAL PERFORMANCE AND FIRM VALUE: THE CASE OF SAUDI ARABIA

Keywords

*Social Disclosure;
Financial Performance;
Firm Value; Content
Analysis.*

Abstract

This study aims to recognize corporate social responsibility disclosure level and its potential influence on financial performance and firm value in an emerging country, Saudi Arabia. Both the manual content analysis and regression analysis were used to examine a sample of 267 annual reports of Saudi listed firms during 2007-2011. ROA was used as an accounting-based proxy for financial performance, while Tobin's Q was used as a market-based proxy for firm value. The results indicate a social disclosure average of 13%, lower but near to levels of 14.61% and 16% found by Al-Janadi et al. (2013) and Macarulla and Talalweh (2012), respectively, in Saudi samples. The results also indicate that social disclosure level could improve both financial performance measured by ROA and firm value measured by Tobin's Q. Further, role duality, institutional and state ownerships and firm age are found to affect positively the financial performance, but none of governance variables is found to affect firm value.

These findings provide empirical evidence on economic implications of social disclosure that could help formulate firm disclosure policies and develop accounting and disclosure regulations. Also, the study tests the arguments of instrumental stakeholders' theory and good management theory regarding benefits of social and voluntary disclosures and arguments of agency theory regarding impact of corporate governance on firm financial performance and value.

Introduction

Stakeholders' theory argues that firms should consider the diverse needs of all stakeholders including shareholders, employees, customers, society, environmental groups and others. In addition, corporate social responsibility (CSR) is a form of corporate self-regulation integrated into a business model that considers economic, social, and environmental dimensions of firm activities (Cormier *et al.*, 2011; Sun, 2012). Both the stakeholders' theory and concept of CSR alter the traditional culture of 'business is business', to include morals, values, and consider the social and environmental implications of business operations.

Focus on CSR and social disclosure has increased rapidly over the previous decades, especially after a series of devastating industrial disasters. Examples include the Bhopal gas disaster in India in 1984, which left about 16,000 dead and the oil spill in 2010 in Gulf of Mexico, during which around 3.19 million barrels of oil leaked into the Gulf. Recently, in September 2015, the German car giant, Volkswagen, was accused of cheating the diesel emissions tests for cars sold in the USA and Europe. According to the BBC website: www.bbcnews.com, shares in Volkswagen dropped by more than 30% with potential fines of around \$18 billion. This severe market reaction to the Volkswagen scandal reflects that there is a real awareness by market participants and other stakeholders about activities which violate rules that aim to protect society and the environment. These disasters, among other reasons, have placed greater pressure on firms to behave with social responsibility and provide detailed and transparent social disclosure. In turn, this implies that the importance of social disclosure has gained greater relevance than at any other time previously.

Despite the increased demand for social disclosure, certain managers may be reluctant to spend on social disclosure, while firms may not disclose any social information, since it entails extra costs and effort (Qiu *et al.*, 2014). Recognition of the economic benefits of social disclosure for firms and stakeholders is important for disclosure decisions and regulations. Being aware of the benefits of social disclosure, especially on the firm's financial performance may encourage managers to formulate a social disclosure policy and therefore disclose more social information. Since social disclosure is voluntary to a large extent and entails costs (Qiu *et al.*, 2014; Cormier *et al.*, 2011), managers have to trade-off between the decision to increase social disclosure and incur costs or to save costs and in the short term increase net income. However, if managers recognize the benefits of

social disclosure, they may alter their decision. Therefore, there is a need to investigate and provide empirical evidence on the benefits of social disclosure.

Theoretically, a number of authors believe in the economic benefits of social disclosure. First, social disclosure could enhance firm reputation, increase market value, create competitive advantage (Qiu *et al.*, 2014), and help increase earnings forecasts' accuracy (Cormier and Magnan, 2014). Second, social disclosure could help firms attract competent and productive human capital, and build loyalty and customer base (Armitage and Marston, 2008). Third, acceptable social performance and disclosure could increase the firm's ability to attract the best employees and engage in long-term transactions with commercial stakeholders (Cormier *et al.*, 2011). Fourth, social disclosure could lower transaction and monitoring costs (Qiu *et al.*, 2014; Cormier *et al.*, 2011). Fifth, Gray *et al.* (1995) highlight that managers may appeal to social disclosure as an attempt to gain approval from powerful social and political stakeholders. All these arguments reveal that social disclosure could affect firm financial performance and value, directly or indirectly. However, investigating the link between social disclosure and profitability remains unclear (Qiu *et al.*, 2014), and there is still little empirical evidence on the value-relevance of social disclosure (Cormier and Magnan, 2014; Dhaliwal *et al.*, 2012), thereby inviting further investigation.

The main objective of this study is to investigate the economic benefits of social disclosure by investigating its impact on financial performance as measured by return on assets (ROA) and its impact on firm value using Tobin's Q. This study contributes by providing empirical evidence on the economic implications of social disclosure, which could help managers justify spending on social disclosure. Further, the study provides evidence from one of the largest emerging markets in the Middle East, Saudi Arabia. Saudi Arabia is one of the largest oil producers in OPEC and has about 25% of the world's oil reserves (Albassam, 2014) and, consequently, depends primarily on oil revenues as its source of national income. Oil extraction and oil derivative production are the main industries in Saudi Arabia. Therefore, firms operating in Saudi Arabia may face greater pressure to disclose social and environmental information. However, we find a dearth of studies that investigate the economic benefits of social disclosure in Saudi Arabia.

The remainder of study is organized as follows. The next section reviews the existing literature. The third section formulates the hypotheses. The fourth section highlights the study methodology. The fifth section presents and discusses the results and the final section summarizes and concludes this research.

Literature Review

The literature, which examines the relationship between social disclosure and financial performance, can be divided into three sets. The first set of studies uses social disclosure as a dependent variable and financial performance as an independent variable (e.g. Choi *et al.*, 2010; Nelling and Webb, 2009). The second set uses financial performance as a dependent variable and social disclosure as an independent variable (e.g. Jitaree, 2015; Aras *et al.*, 2010), while the third set examines the causality relationships between social disclosure and performance in the two directions (e.g. Qiu *et al.*, 2014; Farag *et al.*, 2014). However, our focus is to examine the influence of social disclosure on financial performance and firm value.

The debate on the influence of social disclosure on financial performance and firm value continues to date with the literature providing a set of recent studies. Nguyen *et al.* (2015) examined 50 firms listed in Vietnam during 2010-2013. The results indicated a significant positive relationship between environmental disclosure and Tobin's Q ratio and a significant negative relationship between employees' disclosure and Tobin's Q ratio. Furthermore, Jitaree (2015) analyzed a sample of 323 public firms listed in Thailand during 2009-2011. The author found that social disclosure on the community and employees are the most social disclosed themes. The results also indicated a significant positive relationship between social disclosure and financial performance as measured by ROA, NPM, and Tobin's Q. The author presented both the stakeholders' and legitimacy theories to explain the results. Moreover, Cheng *et al.* (2015) examined a sample of 805 firms in 2008 and 813 firms in 2009 listed in China. They found a positive relationship between current social disclosure and subsequent performance and that historical performance has positive effects on the issuance of stand-alone social reports. Finally, Plumlee *et al.* (2015) investigated the influence of environmental disclosure quality on firm value in a sample of 474 firm-years of firms listed in the USA during 2000-2005. They found a positive influence of environmental disclosure quality on firm value through both expected cash flow and cost of equity components.

In another study in the Arab world, Omar *et al.* (2014) researched the influence of social disclosure of four types of social activities on financial performance by investigating a sample of 58 firms in Jordan during 2005-2009. They found that only social disclosure related to product characteristics improved the financial performance.

Singh (2014) examined the influence of social disclosure on financial performance of firms by investigating a sample of annual reporting during 2008-2012. The authors measured the performance using ROA, Tobin's Q, and total shareholders' returns. The findings indicated no significant influence of social disclosure on the financial performance either in the short-term or long-term.

One international study undertaken on Islamic banks, Farag *et al.* (2014), assessed the influence of social disclosure on financial performance in a sample of 90 Islamic banks across 13 countries. One of the main results is the significant positive relationship between social disclosure and financial performance. However, the authors found that the causality between social disclosure and financial performance runs from financial performance to social disclosure. Moreover, Matsumura *et al.* (2014) investigated the S&P 500 firms during 2006-2008 to check the firm-value effects of carbon disclosures as one of the social disclosure components. They found that the median value of firms that disclosed carbon data was higher than that of non-disclosing firms and that the markets accounted for voluntary carbon disclosure in firm values.

Yusoff *et al.* (2013) studied 30 annual reports of public-listed firms in Malaysia during 2001-2009. The results revealed a significant relationship between social disclosure structure and financial performance in the subsequent year. The results also indicated that good financial performers displayed a high breadth of disclosure and demonstrated the ability to disclose high a level of social disclosure. The authors concluded that more socially responsible firms gain greater support from stakeholders, which is reflected in better financial performance.

Furthermore, Wibowo (2012) assessed a sample of 25 firms in Indonesia during 2005-2010. The results indicated a positive influence of social disclosure on profitability of firms and that profitability affected positively social performance. The author concluded that social disclosure improves firm image, and is more likely to increase the firm's sales and earnings. Moreover, Uwuigbe and Egbide (2012) analyzed a sample of 41 listed firms in Nigeria in 2008. The results indicated a significant positive relationship between the level of social disclosure and financial performance. However, a negative significant relationship was found between financial leverage and social disclosure.

One study in the Arab world, Bayoud *et al.* (2012), examined 110 annual reports of 40 firms listed in Libya during 2007-2009. The results indicated a significant positive relationship between social disclosure and organizational performance as measured by financial performance and corporate reputation.

However, no significant relationship was found between social disclosure and employee commitment as an indicator of organization performance.

Oeyono *et al.* (2011) investigated a sample of 50 firms listed in Indonesia in 2007. They found that most firms adopted CSR practices and that social disclosure influenced positively a firm's financial performance. Also, Dhaliwal *et al.* (2012) examined the relationship between the issuance of stand-alone social reports and analysts' forecast accuracy in 31 countries during 1994-2007. They found that analysts took into account social disclosure in forecasting financial performance and that the issuance of stand-alone social reports was positively related to lower analyst forecast error - a relationship which was stronger in the stakeholder-oriented countries. In addition, Peters and Mullen (2009) studied a sample of 81 firms listed on the Fortune 500 index in the USA in 1996. They found a positive influence of social disclosure on financial performance as measured by ROA. They concluded that firms would be more likely to have a better financial performance if engaged in social disclosure for both short-term and long-term periods.

Furthermore, Cormier *et al.* (2009) analyzed the impact of social and human capital disclosure on information asymmetry and stock markets by investigating a sample of 131 firms listed on Toronto Stock Exchange in 2005. The authors found evidence on the value-relevance of social and human capital disclosure, where such disclosure was found to increase the Tobin's Q and reduce the share price volatility. Tsoutsoura (2004) examined a sample of firms listed on the S&P 500 in the USA during 1996-2000. The results indicate a significant positive relationship between social disclosure and financial performance as measured by ROA and return on sales (ROS), where the socially responsible firms exhibited a better financial performance than that of others.

In Saudi Arabia, the literature provides a number of studies but with major limitations. Macarulla and Talalweh (2012) investigated 132 Saudi listed firms in 2008. They found a low level of social disclosure of only 16%. They found also that the main determinants of social disclosure were firm profitability, firm size, and industry type. However, their study did not address any economic implications of social disclosure. Moreover, Al-Janadi *et al.* (2013) examined a sample of 87 firms listed in Saudi Arabia during 2006-2007. The authors found that the average of social disclosure was only 14.61%. They found significant positive relationships between state ownership, audit quality, chief executive officer (CEO) duality, board independence, and board size and voluntary disclosure including social and environmental disclosures. However, the study did not address any of the

economic benefits of the voluntary, social disclosure. One further study by Khasharmeh and Desoky (2013) examined the on-line social disclosure in the Gulf Cooperation Council (GCC) countries with 44 Saudi firms accounting for 26.99% of the total sample. The findings indicated that the on-line social disclosure average was 21.86% in Saudi Arabia. The findings also indicated that firm risk, profitability, type, and size were the main determinants of on-line social disclosure in the Saudi Arabian sample.

In summary, the disclosure literature suffers from a number of gaps, especially in relation to Saudi Arabia. The last three studies undertaken in Saudi Arabia did not address any of the economic benefits of social disclosure; they merely focused on its determinants. Furthermore, they only examined a small range of one or two years and also had a small samples size. Finally, no study was found to address the influence of social disclosure on financial performance in Saudi Arabia. Accordingly, this study contributes by investigating the economic influence of social disclosure on financial performance and firm value using a larger sample size (267 observations) and longer study period (2007-2011) in one of the developing and most important economic countries in the Middle East, Saudi Arabia.

Development of Hypotheses

To date, the debate continues as to the economic benefits of social disclosure. There are two competing perspectives on the influence of social disclosure on financial performance. The positive perspective argues that social disclosure could improve the financial performance of firms for several reasons. First, social disclosure could benefit firms by attracting productive human capital, building brand loyalty, and broadening the customer base (Armitage and Marston, 2008). Second, extensive and objective social disclosure can confer competitive advantages to firms including a strong reputation (Armitage and Marston, 2008). Third, Qiu *et al.* (2014) argue that investors view favorably firms with more objective and extensive social disclosure. Fourth, a strong reputation in the social environment created by social disclosure could retain quality employees, enhance employee morale, reduce the firm's transaction costs, and thus enhance productivity and profitability (Qiu *et al.*, 2014; Cormier *et al.*, 2011). Furthermore, socially responsible firms could improve relationships with their investors, bankers, and other stakeholder through social disclosure (Sun, 2012). Finally, Cornell and Shapiro (1987) assume that satisfying the different needs of stakeholders will improve firm reputation and lead to a better financial performance.

This positive perspective of social disclosure influence is supported by both the good management theory and the instrumental stakeholders theory (Waddock and Graves, 1997; Cheng *et al.*, 2015). First, the good management theory argues that when managers are good, undertake socially responsible activities, and provide adequate relevant disclosure, their firms will be rewarded by a better financial performance and higher firm value. Second, according to the instrumental stakeholders theory, social disclosure could improve the corporate image and thus the financial performance in subsequent years (Cheng *et al.*, 2015; Yusoff *et al.*, 2013), since managers satisfy the needs of stakeholders with greater disclosure and transparency.

Empirically, a number of authors provide empirical evidence that supports this positive perspective. Examples include Plumlee *et al.* (2015), Peters and Mullen (2009), and Tsoutsoura (2004) in relation to the USA, Jitaree (2015) in relation to Thailand, Cheng *et al.* (2015) in relation to China, Matsumura *et al.* (2014) in relation to the UK, and Yusoff *et al.* (2013) in relation to Malaysia.

On the other hand, the negative perspective argues that disclosure on social disclosure could incur firms additional expenses, which could reduce profits and owners' equity (Omar *et al.*, 2014). Neoclassical economists (e.g. Simpson and Kohers, 2002) believe in the negative influence of social disclosure on financial performance, as they argue that when firms meet the social needs of their stakeholders, the firms are more likely to suffer a competitive disadvantage, resulting in lower profits (Farag *et al.*, 2014). However, we found only a small number of studies that provide empirical evidence supporting this perspective, such as Nguyen *et al.* (2015), who found a negative relationship between employees' disclosure as a type of social disclosure and financial performance.

Based on the discussion above, we argue for a positive perspective for a number reasons. First, if firms behave in the interests of society and pay attention to communities in which they operate, they are more likely to adopt strategies to maximize the shareholders' wealth. In other words, the firms that respect their customers, employees, and communities are more likely to respect their shareholders by striving to achieve an improved financial performance. Second, good social disclosure is a sign of strong social responsibility towards all stakeholders including shareholders, which could create a belief in the minds of all stakeholders that these firms are respectable. Third, a good social disclosure could induce sympathy from stakeholders, especially if firms face any sudden circumstances that threaten their continuity. Stakeholders could protect their

firms from collapse if social disclosure had succeeded in building a solid belief that their firms were behaving socially and responsibly and therefore deserved survival. All these points would be translated into a lower cost of capital and higher sales and support, especially in financially distressed periods, which will ultimately improve financial performance and firm value. Accordingly, our hypotheses are:

H₁: Firms with high social disclosure levels report higher financial performance.

H₂: Firms with high social disclosure levels report higher firm value.

Methodology

Sample and Data

As shown in Table 1, the study covers the period 2007-2011. This research started after the formal issuance of Saudi corporate governance (CG) code in November 2006. Table 1 also shows that there are 694 firm-year observations before exclusions. We excluded observations related to financial and insurance firms and those with missing data on the models' variables, which resulted in 267 firm-year observations as the final sample. We have noticed that observations with missing data have decreased from 64 in 2007 to 37 in 2011. This may be because firms were getting used to complying with Saudi corporate governance code. The firms' annual reports were our main source of data, which we collected from two Saudi websites: www.arqaam.com and www.tadawual.com.sa.

Study Models

We designed and ran two models; the first for measuring financial performance using ROA and the second using Tobin's Q as a proxy for firm value. We estimate the following two regression models using Ordinary Least Squares (OLS):

Model 1:

$$ROA_{it} = \beta_0 + \beta_1 CSRI_{it} + \beta_2 Brdind_{it} + \beta_3 Dual_{it} + \beta_4 Instown_{it} + \beta_5 Statown_{it} \\ + \beta_6 Size_{it} + \beta_7 Age_{it} + \beta_8 Levrg_{it} + \varepsilon$$

Model 2:

$$TQ_{it} = \beta_0 + \beta_1 CSRI_{it} + \beta_2 Brdind_{it} + \beta_3 Dual_{it} + \beta_4 Instown_{it} \\ + \beta_5 Statown_{it} + \beta_6 Size_{it} + \beta_7 Age_{it} + \beta_8 Levrg_{it} + \varepsilon$$

Dependent Variables

The study examines the influence of social disclosure on both financial performance and firm value. Prior research used two sets of measures: (1) accounting-based performance measures, such as ROA, return on equity (ROE), and earnings per share (EPS), and (2) market-based performance measures, such as Tobin's Q and total stakeholders' return (Singh, 2014; Cheng *et al.*, 2015). We selected ROA as the study's first dependent variable and as a proxy for financial performance, and Tobin's Q as a proxy for firm value as a second dependent variable, similar to a number of previous studies: Klapper and Love (2004), Tsoutsoura (2004), Peters and Mullen (2009), Singh (2014), Jitaree (2015), and Khlif *et al.* (2015).

Independent Variables

The study's main independent variable is the extent of social disclosure. Content analysis is deemed to be the most appropriate form of analysis to measure the level at which managers disclose social information within annual reports; it is the most prevalent analysis within disclosure studies. Some studies used a manual content analysis (e.g. Elzahar and Hussainey, 2012), while others applied a computerized content analysis (e.g. Kothari *et al.*, 2009). This study used a manual content analysis, since the computerized approach requires that all annual reports be in the same language, English (Abdel-Fattah, 2008), which was not available in the Saudi annual reports. However, a manual content analysis is more subjective than a computerized one. Therefore, each of the two authors of this study analyzed each annual report in the sample and ticked independently the items that met the checklist. No significant variations for the social disclosure index were found.

Accordingly, the manual content analysis is applied in three steps. First, based on ISO 26000, a checklist is made up consisting of 17 social disclosure items (Appendix 1). Second, the sample annual reports were analyzed and the actual

Table 1
The Study Sample

	2007	2008	2009	2010	2011	Total
Original Sample	111	129	146	152	156	694
(-) Financial firm-year observations	(28)	(32)	(36)	(38)	(38)	(172)
(-) Missing data on model variables	(64)	(58)	(52)	(44)	(37)	(255)
Final Sample	19	39	58	70	81	267

items that met those in the checklist are ticked using the Dischotomous Scoring procedure. Third, the ratio of the actual social items disclosed to the maximum number of items in the checklist was calculated to use as a social disclosure index.

Control Variables

Corporate Governance

There is a strong tendency in the literature that corporate governance and ownership structure could improve financial performance. Agency theory suggests that well-governed firms are more likely to realize better performance and high valuation due to lower agency costs (Sami *et al.*, 2011). Moreover, the board of directors is a main governance mechanism that ensures that firm assets are managed efficiently and in the interests of shareholders (Fama and Jensen, 1983). Furthermore, ownership structure is another governance mechanism that gives managers an incentive to invest in value-maximizing activities (Jensen and Meckling, 1976) in order to satisfy institutional investors and large shareholders desire for better performance. Moreover, Jermias and Gani (2013) and Jermias (2007) provide evidence that the agency theory argument of board independence and board chairman separation will affect positively financial performance because of effective monitoring of managers' decisions, especially those related to profit maximization. Accordingly, two board characteristics as control variables are added, viz. board independence with a positive influence expectation and role duality with a negative influence expectation.

In addition, agency theory suggests that institutional investors closely monitor managers' decisions and future strategies to maximize profits and face risks (Elzahar and Hussainey, 2012; Abdel-Fattah, 2008). Moreover, the efficient-monitoring hypothesis suggests that institutional investors are specialist investors who have the expertise, skills, resources and incentives to effectively monitor managers' decisions (Al-Fayoumi *et al.*, 2010; Abdel-Fattah, 2008), which ultimately will improve financial performance. In relation to state ownership, governments are more likely to help businesses succeed and realize better financial performance, since this will help governments achieve national economic goals, such as reducing unemployment rates and increasing gross domestic product (GDP). Accordingly, a positive influence of both institutional and state ownership on financial performance is expected.

Corporate Characteristics

Finally, three corporate characteristics that we expect to affect financial performance are added, viz. firm size, firm age, and firm leverage, similar to Singh (2014). It is argued that larger firms generally have more capital, experience and stakeholders and operate under pressure to realize high profits than do smaller firms. In addition, older firms generally have more experience, market share and customers to achieve greater profit levels than do newer firms,. High debt levels, by contrast, are an obstacle for firms toward realizing greater profits, since they have to pay more interest expenses. Table 2 summarizes measurements and definitions of all study variables.

Results and Discussion

Descriptive Statistics

As shown in Table 3, the mean value of ROA is 0.10, implying that the sample firms tend to realize profits rather than losses. However, this rate is lower than 0.12 found by Qiu *et al.* (2014) in the UK, but higher than 0.01 found by Cormier and Magnan (2014) in Canada and 0.04 found by Cheng *et al.* (2015) in China. The mean value of TQ is 0.85; Jitaree (2015) found mean values of TQ ranging from 0.25 to 1.07 in Thailand, Nguyen *et al.* (2015) found TQ of 1.26 in Vietnam, and Cheng *et al.* (2015) found TQ of 0.46 in China. The average actual social items disclosed is 2.23, which represents about 13% of the total checklist items (2.23/17).

This rate is lower than 16%, 15%, and 22% found by Khasharmeh and Desoky (2013), Al-Janadi *et al.* (2013), and Macarulla and Talalweh (2012) in Saudi samples. The maximum value of 12 indicates that some firms disclose up to 70% of checklist items, while the minimum value of zero indicates that some sample firms do not disclose any social information.

Meanwhile, the mean value of board independence is 0.52, indicating that around 52% of members of the sample board members are outsiders, which is lower than the 84% found by Al-Janadi *et al.* (2013) for a Saudi sample. The mean value of role duality variable is 0.85, implying that 85% of sample board Chairmen are also CEO. The mean value of institutional ownership is 13% with a maximum value of 66%, while the mean value of state ownership is 8% with a maximum value of 83%.

Table 2
The Study Variables

Symbol	Definition	Measurement
Dependent Variables		
ROA	Return on Assets	ROA is measured as the ratio of net income to total assets.
TQ	Tobin's Q	The SUM of equity market value and total liabilities DIVIDED by total assets at the end of fiscal year, where equity market value is the closing price at fiscal year-end multiplied by number of outstanding shares (Khlif <i>et al.</i> , 2015; Singh, 2014; Klapper and Love, 2004).
Independent Variable		
CSRI	Index of Corporate Social Responsibility Disclosure	The ratio of actual CSR items as disclosed by a firm <i>i</i> during the year <i>t</i> to the maximum number of CSR disclosure items as listed in the prepared checklist, based on ISO 26000.
Control Variables		
Brdind	Board Independence	<i>Board independence</i> is the ratio of outside directors to total number of directors on the board.
Dual	Role Duality	<i>Role duality</i> is a dummy variable that equals one if the board chairman is also the CEO and zero otherwise.
Instown	Institutional Ownership	<i>Institutional ownership</i> is measured as the ratio of shares held by institutional investors to the total number of outstanding shares.
Statown	State Ownership	<i>State ownership</i> is number of shares held by Saudi government or any of its agencies divided by the total number of outstanding shares.
Size	Firm Size	<i>Firm size</i> is measured by the natural logarithm of total assets.
Age	Firm Age	<i>Firm age</i> is natural logarithm of the period from first establishment of the firm <i>i</i> to the year <i>t</i> .
Levrg	Firm Leverage	<i>Firm leverage</i> is total debt divided by total assets.

Pearson Correlation Test

The Pearson correlation test was used to examine the collinearity between independent variables of the study models. As shown in Table 4, the highest correlation between independent variables is 0.45 between state ownership and firm size, followed by 0.44 between social disclosure index and state ownership. These correlations are not deemed a problem of Multicollinearity, since they do not exceed 50%. Cheng *et al.* (2015) and Gujarati (1995) consider that correlations between independent variables pose a serious problem if the score exceeds 80%.

However, given some of these relatively high correlations, this study calculates variance inflation factors (VIF) for the model and finds that VIF values are within

Table 3
Descriptive Statistics

Variable	Mean	Min	Max	SD.	Median
ROA	0.10	-0.59	7.18	0.40	0.07
TQ	0.85	0.31	2.85	0.22	0.81
CSRI	2.23	0.00	12.00	2.72	1.00
Brdind	0.52	0.00	1.00	0.22	0.50
Dual	0.85	0.00	1.00	0.36	1.00
Instown	0.13	0.00	0.66	0.19	0.00
Statown	0.08	0.00	0.83	0.17	0.00
Size	9.24	7.18	11.05	0.69	9.22
Age	1.21	0.00	1.74	0.39	1.28
Levrg	0.08	0.00	1.00	0.28	0.00

acceptable limits. Table 5 shows the VIF and tolerance coefficients of each independent variable; the maximum VIF value is 1.87. Thus, multicollinearity does not appear to be a problem.

Regression Analysis

Influence of Social Disclosure on Return on Assets (ROA)

Table 6 shows the results for Model 1 which tests the influence of social disclosure on financial performance measured by ROA. The results indicate that Model 1 is statistically significant, where F-value = 8.620 (Prob > F = 0.000). Furthermore, Adjusted R^2 equals 0.32, indicating that the variations in the model's independent variables explain 32% of the total variation in the dependent value (ROA).

The test variable (CSRI) is found to be statistically significant at 1% level and positively related to ROA ($\beta_1 = 0.235$; t-statistic = 2.740), indicating that firms which have a higher social disclosure levels have higher ROA. This result is consistent with that of Cheng *et al.* (2015) in China, and Plumlee *et al.* (2015), Peters and Mullen (2009), and Tsoutsoura (2004) in the USA. This result also confirms our argument that higher social disclosure will be translated into better financial performance. Moreover, it supports the arguments of the good management theory (Cheng *et al.* 2015; Waddock and Graves, 1997) that good management and socially responsible firms are rewarded by better financial performance, as well as the argument of instrumental stakeholders theory (Cheng

Table 4
Pearson Correlation Test

Variable	CSRI	Brdind	Dual	Instown	Statown	Size	Age	Levrg
CSRI	1.00							
Brdind	0.10	1.00						
Dual	0.20*	-0.03	1.00					
Instown	-0.07	-0.35*	-0.03	1.00				
Statown	0.44*	-0.05	0.02	-0.24*	1.00			
Size	0.37*	-0.10	0.05	0.27*	0.45*	1.00		
Age	0.10	0.20*	-0.04	-0.34*	0.28*	-0.26*	1.00	
Levrg	0.19*	0.16*	0.11	-0.12	0.02	-0.13	0.10	1.00

*significant at 1%, ** significant at 5%, ***significant at 10%

Table 5
VIF Test

VIF Test Results		
Variable	VIF	1/VIF
CSRI	1.870	0.535
Brdind	1.790	0.557
Dual	1.670	0.598
Instown	1.450	0.690
Statown	1.370	0.729
Size	1.350	0.741
Age	1.320	0.759
Leveg	1.190	0.892
Mean VIF	1.501	

et al., 2015) that social disclosure could enhance corporate image and financial performance. Accordingly, the study's first hypothesis is supported.

The results for corporate governance show that the board independence variable is statistically insignificant ($\beta_2 = -0.035$; $t\text{-value} = -0.900$), indicating that hiring more outsiders on the board may not matter, which contradicts the argument of agency theory. Furthermore, the role duality variable is statistically significant at 1% level and positively related to ROA ($\beta_3 = 0.063$; $t\text{-value} = 4.490$), implying that the separation of board chairman and CEO may affect financial performance negatively. This result contradicts the arguments of agency theory and those of Jermias and Gani (2013) and Jermias (2007) that board chairman/CEO separation could improve financial performance.

Table 6
The Regression Results of Model 1

Model 1: $RQA_{it} = \beta_0 + \beta_1 CSRI_{it} + \beta_2 Brdind_{it} + \beta_3 Dual_{it} + \beta_4 Instown_{it} + \beta_5 Statown_{it} + \beta_6 Size_{it} + \beta_7 Age_{it} + \beta_8 Levrg_{it} + \varepsilon$					
Symbol	Definition	Coef.	t- value	P > t	
Cons.	Model Constant	β_0	0.031	0.200	0.842
CSRI	Social Disclosure Index	β_1	0.235	2.740***	0.001
Brdind	Board Independence	β_2	-0.035	-0.900	0.369
Dual	Role Duality	β_3	0.063	4.490***	0.000
Instown	Institutional Ownership	β_4	0.193	4.380***	0.000
Statown	State Ownership	β_5	0.246	5.210***	0.000
Size	Firm size	β_6	-0.016	-1.020	0.308
Age	Firm Age	β_7	0.093	2.990***	0.003
Levrg	Firm Leverage	β_8	0.016	0.740	0.460
Model Statistics					
N = 267	F-value = 8.620	Prob > F = 0.000	Adj. R-sq = 0.32		

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

For ownership influence, both institutional and state ownership are found to affect financial performance positively ($\beta_4 = 0.193$; t-value = 4.380, $\beta_5 = 0.246$; t-value = 5.210, respectively), indicating that ownership structure could play a positive role in enhancing firm performance. This is consistent with Jensen and Meckling (1976), who argue that ownership structure could encourage managers to invest in profit and value-maximizing activities.

In relation to institutional ownership, the results are consistent with agency theory and the efficient-monitoring hypothesis which proposes that institutional investors have the experience, resources and power to effectively monitor managers' decisions (Elzahar and Hussainey, 2012; Al-Fayoumi *et al.*, 2010; Abdel-Fattah, 2008) and are also profit seekers, which will ultimately improve financial performance. In relation to state ownership, the results are consistent with our argument that state ownership will induce managers to engage in promising and profitable projects and to expand investments in order to aid governments achieve their national objectives, such as higher GDP and employment rates, which will finally improve firm financial performance.

In terms of corporate characteristics, Table 6 shows that firm age, which is the only significant characteristic, is statistically significant at 1% level and positively related to ROA ($\beta_7 = 0.093$; t-value = 2.990). This result is consistent with our

argument that older firms have more experience, a higher market share and wider customer base than do newer firms, which could enable older firms to realize more profits.

In summary, the results from Model 1 indicate that social disclosure levels, role duality, institutional ownership, state ownership, and firm age improve financial performance as measured by ROA, while no significant relationship was found for board independence, firm size, and firm leverage. Accordingly, support is found for hypothesis 1.

Influence of Social Disclosure on Firm Value (Tobin's Q)

To test the second hypothesis, we ran Model 2 to check the influence of social disclosure on firm value as measured by Tobin's Q. Table 7 highlights that Model 2 is statistically significant (F-value = 8.190, Prob > F = 0.000) and that the model explains 29% of total variations of TQ. The test variable (CSRI) was found to positively affect the firm value ($\beta_1 = 0.012$; t-value = 2.060), indicating that firms with higher social disclosure levels enjoy higher firm value. This result is consistent with Cormier *et al.* (2009) in Canada, Nguyen *et al.* (2015) in Vietnam, and Jitaree (2015) in Thailand, but inconsistent with Cheng *et al.* (2015), who found no significant relationship between the two variables in China. This outcome confirms the results in Table 7 that social disclosure could improve financial performance and supports the arguments of good management theory and instrumental stakeholders' theory (Cheng *et al.*, 2015; Waddock and Graves, 1997). Accordingly, support is found for the second hypothesis.

In terms of governance control variables, Table 7 shows that none of the governance and ownership structure variables are statistically significant, indicating that corporate governance and ownership structures may not affect firm value in Saudi Arabia. This result contrasts with the arguments of agency theory that effective governance and ownership structure could affect firm value through effective monitoring of managers' decisions (Jermias and Gani, 2013; Abdel-Fattah, 2008; Fama and Jensen, 1983; Jensen and Meckling, 1976) or through reducing agency costs (Sami *et al.*, 2011).

In relation to corporate characteristics, firm leverage was found to be statistically significant at 5% level and positively related to firm value ($\beta_8 = 0.235$; t-value = 2.060), implying that firms with a high leverage ratio may realize higher firm value, a finding which contradicts our expectations. Finally, no significant relationships were found for firm size and age.

Table 7
The Regression Results of Model 2

Model 2: $TQ_{it} = \beta_0 + \beta_1 CSRI_{it} + \beta_2 Brdind_{it} + \beta_3 Dual_{it} + \beta_4 Instown_{it} + \beta_5 Statown_{it} + \beta_6 Size_{it} + \beta_7 Age_{it} + \beta_8 Levrg_{it} + \varepsilon$					
Symbol	Definition	Coef.	t- value	P > t	
Cons.	Model Constant	β_0	0.092	0.390	0.697
CSRI	Social Disclosure Index	β_1	0.012	2.060**	0.041
Brdind	Board Independence	β_2	0.042	1.070	0.288
Dual	Role Duality	β_3	0.014	0.930	0.355
Instown	Institutional Ownership	β_4	-0.051	-1.390	0.167
Statown	State Ownership	β_5	-0.114	-1.290	0.201
Size	Firm size	β_6	-0.012	-0.550	0.586
Age	Firm Age	β_7	-0.002	-0.090	0.932
Levrg	Firm Leverage	β_8	0.235	2.060**	0.041
Model Statistics					
N = 267	F-value = 8.190	Prob > F = 0.000	Adj. R-sq = 0.29		

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

Overall, the regression results in Tables 6 and 7 indicate that higher social disclosure levels could improve financial performance and firm value, which provides support for the study's two hypotheses. Furthermore, board independence was found not to affect neither financial performance nor firm value, while role duality was found to affect only financial performance. Moreover, institutional and state ownership were found to positively affect financial performance but not firm value. Finally, firm age was found to positively affect financial performance, while firm leverage was found to positively affect firm value. The overall conclusion is that firms with high social disclosure levels are rewarded with a better financial performance and higher firm value, implying that social disclosure could have economic benefits that may offset its costs.

Conclusion

This study has investigated the extent of social disclosure and its potential influence on financial performance and firm value to ascertain if the results support the arguments of agency theory, good management theory and instrumental stakeholders' theory that social disclosure could improve financial performance and firm value. A sample of 267 annual reports of Saudi listed firms during 2007-2011 has been examined using manual content analysis and regression analysis.

Because the Saudi corporate governance code was first applied in 2007, four governance variables have been included: board independence, role duality, institutional ownership and state ownership.

The results indicate that the social disclosure level in Saudi Arabia is 13%, which is close to the 14.61% and 16% found by Al-Janadi *et al.* (2013) and Macarulla and Talalweh (2012) in Saudi samples. The findings also indicate that social disclosure levels could positively affect both financial performance and firm value. This supports the arguments of good management theory, instrumental stakeholders' theory and agency theory that social disclosure could improve firm financial performance and value, because of effective monitoring and lower agency costs. In terms of corporate governance variables, board independence was found not to affect either financial performance or firm value, while role duality was found to affect financial performance positively, but not to affect firm value. Furthermore, both institutional and state ownership were found to affect financial performance, but not firm value. Finally, firm age was found to affect financial performance positively, while firm leverage was found to positively affect firm value. However, no effect was found for firm size.

The results imply that social disclosure is value-relevant and could provide economic benefits that justify its costs. Therefore, managers of firms should increase the quantity and quality of social disclosure. Furthermore, managers of firms should recognize that although social disclosure is voluntary and entails additional costs, it could improve firm performance and value. Moreover, other firms that do not disclose social information or do not engage in social activities should consider providing social disclosure in order to achieve better financial performance. Finally, market participants should recognize that institutional and state ownership could play an effective role in the improvement of financial performance and value of firms.

This study suffers from a number of limitations. First, the study ignores the joint effect of governance and social disclosure on financial performance and firm value. Second, it would be more informative if the study measured social disclosure quality rather than quantity. In fact, the study ignores the qualitative characteristics of social disclosure information. Third, managers may disclose social information through annual reports, websites, management reports, or media. However, the study has investigated only annual reports. Fourth, although prior literature argues that the relationship between social disclosure and financial

performance could be in two directions, this study as concentrated only on one direction: social disclosure to financial performance.

Finally, the study encourages researchers to investigate other economic benefits of social disclosure, such as its impact on information asymmetry, cost of capital, and accuracy of earnings' forecasts. Furthermore, researchers should consider the quality of disclosure in addition to its quantity when investigating it. Researchers could also provide more evidence on the causality between social disclosure and financial performance.

Appendix 1

Abbreviation	Item	Item Description
SPONSOR	Sports Sponsor	1 if the company sponsor sport activities and zero otherwise
DONATION	Donations to charitable organizations	1 if there is information about donations to charitable organizations and zero otherwise
SUPPORT	support awareness campaigns	1 if the company supports awareness campaigns, and zero otherwise.
CSRnumb	Number of social responsibility programs	1 if there is a social responsibility program, or more and zero otherwise
CSRown	a special social responsibility program	1 if the company has its own social responsibility program, and zero otherwise
HSEmply	Health and safety program for employees	1 if there is a health and safety program for employees, and zero otherwise
TRAINemply	Staff training program	1 if there is a staff training program, and zero otherwise
DISABLEmply	Program for the employment of disabled	1 if there is a program for the employment of the disabled, and zero otherwise
HUMANR	Program for the employment of disabled	1 if the company has a human rights program, and zero otherwise
CHILDL	Anti-child labor program	1 if the company has anti-child labor program, and zero otherwise
INTERNSH	Internship program	1 if the company has an internship program, and zero otherwise
SCHOLAR-SHIP	Scholarship program	1 if the company has scholarship program, and zero otherwise
TALENT	development of talent	1 if the company has a program for the development of talent, and the value zero otherwise
WOMENemp	A program to recruit women	1 if the company has a program to enable the employment of women, and zero otherwise
UNEMPL	Program to reduce unemployment	1 if the company has a program to reduce unemployment, and zero otherwise
CSRcomm	Commission for Social Responsibility	1 if the company has a committee of social responsibility, and zero otherwise
CSRreprt	CSR report	1 if the company has a report on social responsibility and zero otherwise

References

- Abdel-Fattah, T. M. H. 2008. Voluntary Disclosure Practices in Emerging Capital Markets: The Case of Egypt. PhD Thesis. Durham University.
- Abraham, S., and P. Cox. 2007. Analyzing the Determinants of Narrative Risk Information in UK FTSE 100 Annual Reports. *The British Accounting Review* 39 (3): 227-248.
- Albassam, W. M. 2014. Corporate Governance, Voluntary Disclosure and Financial Performance: An Empirical Analysis of Saudi Listed Firms using Mixed-Methods of Research Design. PhD Thesis. University of Glasgow.
- Al-Fayoumi, N., B. Abuzayed, and D. Alexander. 2010. Ownership Structure and Earnings Management in Emerging Markets: The Case of Jordan. *International Research Journal of Finance and Economics* 38 (1): 28-47.
- Al-Janadi, Y., R. A. Rahman, and N. H. Omar. 2013. Corporate Governance Mechanisms and Voluntary Disclosure in Saudi Arabia. *Research Journal of Finance and Accounting* 4 (4): 25-36.
- Aras, G., A. Aybars, and O. Kutlu. 2010. Managing Corporate Performance: Investigating the Relationship between Corporate Social Responsibility and Financial Performance in Emerging Markets. *International Journal of Productivity and Performance Management* 59 (3): 229-254.
- Armitage, S., and C. Marston. 2008. Corporate Disclosure, Cost of Capital and Reputation: Evidence from Finance Directors. *The British Accounting Review* 40 (4): 314-336.
- Bayoud, N. S., M. Kavanagh, and G. Slaughter. 2012. An Empirical Study of the Relationship between Corporate Social Responsibility Disclosure and Organizational Performance: Evidence from Libya. *International Journal of Management and Marketing Research* 5 (3): 69-82.
- BBC News Website: < <http://www.bbc.com/news/business-34345210> > (accessed on 25 September 2015).
- Cheng, S., K. Z. Lin, and W. Wong. 2015. Corporate Social Responsibility Reporting and Firm Performance: Evidence from China. *Journal of Management & Governance* (online), Accessed August 15, 2015, DOI: 10.1007/s10997-015-9309-1
- Choi, J., H. Sami, and H. Zhou. 2010. Ownership Structure and Information Asymmetry. *China Journal of Accounting Research* 3 (1): 13-50.
- Cormier, D., M-J. Ledoux, and M. Magnan. 2011. The Informational Contribution of Social and Environmental Disclosures for Investors. *Management Decision* 49 (8): 1276-1304.
- Cormier, D., and M. Magnan. 2014. The Impact of Social Responsibility Disclosure and Governance on Financial Analysts' Information Environment. *Corporate Governance* 14 (4): 467-484.

- Cormier, D., W. Aerts, M-J, Ledoux, and M. Magnan. 2009. Attributes of Social and Human Capital Disclosure and Information Asymmetry between Managers and Investors. *Canadian Journal of Administrative Sciences* 26 (1): 71-88.
- Cornell, B., and A. C. Shapiro. 1987. Corporate Stakeholders and Corporate Finance. *Financial Management* 16 (1): 5-14.
- Dhaliwal, D. S., S. Radhakrishnan, A. Tsang, and Y. G. Yang. 2012. Nonfinancial Disclosure and Analyst Forecast Accuracy: International Evidence on Corporate Social Responsibility Disclosure. *The Accounting Review* 87 (3): 723-759.
- Elzahar, H., and K. Hussainey. 2012. Determinants of Narrative Risk Disclosures in UK Interim Reports. *The Journal of Risk Finance* 13 (2): 133-147.
- Fama, E., and M. Jensen. 1983. Separation of Ownership and Control. *Journal of Law & Economics* 26 (2): 301-325.
- Farag, H., C. Mallin, and K. Ow-Yong. 2014. Corporate Social Responsibility and Financial Performance in Islamic Banks. *Journal of Economic Behavior & Organization* 103 (special issue): S21-S38.
- Gray, R., R. Kouhy, and S. Lavers. 1995. Corporate Social and Environmental Reporting: A Review of The Literature and a Longitudinal Study of UK Disclosure. *Accounting, Auditing and Accountability Journal* 8 (2): 47-77.
- Guajarati, D. N. 1995. *Basic Econometrics*. McGraw-Hill, New York, NY.
- Jensen, M., and W. Meckling. 1976. Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. *Journal of Financial Economics* 3 (October): 305-360.
- Jermias, J. 2007. The Effects of Corporate Governance on the Relationship between Innovative Efforts and Performance. *European Accounting Review* 16 (4): 827-854.
- Jermias, J., and L. Gani. 2013. The Impact of Board Capital and Board Characteristics on Firm Performance. *The British Accounting Review* 46 (2): 135-153.
- Jitaree, W. 2015. Corporate Social Responsibility Disclosure and Financial Performance: Evidence from Thailand. PhD Thesis. School of Accounting, Economics and Finance, University of Wollongong, Australia.
- Khasharmeh, H. A., and A. M. Desoky. 2013. On-line Corporate Social Responsibility Disclosures: The Case of the Gulf Cooperation Council Countries. *Global Review of Accounting and Finance* 4 (2): 39-64.
- Khlif, H., K. Hussainey, and I. Acheh. 2015. The Effect of National Culture on the Association between Profitability and Corporate Social and Environmental Disclosure: A Meta-Analysis. *Meditari Accounting Research* 23 (3): 296-321.
- Klapper, L., and I. Love. 2004. Corporate Governance, Investors Protection and Performance in Emerging Markets. *Journal of Corporate Finance* 10 (5): 703-728.
- Kothari, S. P., X. Li, and J. E. Short. 2009. The Effect of Disclosures by Management, Analysts, and Business Press on Cost of Capital, Return Volatility, and Analyst

- Forecasts: A Study using Content Analysis. *The Accounting Review* 84 (5): 1639-1670.
- Macarulla, F. L., and M. A. Talalweh. 2012. Voluntary Corporate Social Responsibility Disclosure: A Case Study of Saudi Arabia. *Jordan Journal of Business Administration* 8 (4): 815-830.
- Mandurah, S., J. Khatib, and S. Al-Sabaan. 2012. Corporate Social Responsibility Among Saudi Arabian Firms: An Empirical Investigation. *The Journal of Applied Business Research* 28 (5): 1049-1058.
- Matsumura, E., R. Prakash, and S. Vera-Munoz. 2014. Firm-Value Effects of Carbon Emissions and Carbon Disclosures. *The Accounting Review* 89 (2): 695-724.
- Nelling, E., and E. Webb. 2009. Corporate Social Responsibility and Financial Performance: The “Virtuous Circle” Revisited. *Review of Quantitative Finance and Accounting* 32 (2): 197-209.
- Nguyen, B. T. N., H. T. T. Tran, O. H. Le, P. T. Nguyen, T. H. Trinh, and V. Le. 2015. Association between Corporate Social Responsibility Disclosures and Firm Value-Empirical Evidence from Vietnam. *International Journal of Accounting and Financial Reporting* 5 (1): 212- 228.
- Oeyono, J., M. Samy, and R. Bampton. 2011. An Examination of Corporate Social Responsibility and Financial Performance. *Journal of Global Responsibility* 2 (1): 100-112.
- Omar, B. F., E. M. Alshaar, and N. O. Zolom. 2014. Influence of Corporate Social Responsibility Disclosure on Financial Performance for Public Listed Jordanian Corporations. *Managerial Sciences Studies* 41 (2): 240-258.
- Peters, R., and M. R. Mullen. 2009. Some Evidence of the Cumulative Effective of Corporate Social Responsibility on Financial Performance. *The Journal of Global Business Issues* 3 (1): 1-15.
- Plumlee, M., D. Brown, R. M. Hayes, and R. S. Marshall. 2015. Voluntary Environmental Disclosure Quality and Firm Value: Further Evidence. *Journal of Accounting and Public Policy* 34 (4): 336-361.
- Qiu, Y., A. Shaukat, and R. Tharyan. 2014. Environmental and Social Disclosures: Link with Corporate Financial Performance. *The British Accounting Review* (In-Press).
- Sami, H., J. Wang, and H. Zhou. 2011. Corporate Governance and Operating Performance of Chinese Listed Firms. *Journal of International Accounting, Auditing and Taxation* 20 (2): 106-114.
- Simpson, W. G., and T. Kohers. 2002. The Link between Corporate Social and Financial Performance: Evidence from the Banking Industry. *Journal of Business Ethics* 35 (2): 97-109.
- Singh, S. 2014. Impact of Corporate Social Responsibility Disclosure on the Financial Performance of Firms in UK. Master Thesis, School of Management and Governance, University of Twente, The Netherlands.

- Sun, L. 2012. Further Evidence on the Association between Corporate Social Responsibility and Financial Performance. *International Journal of Law and Management* 54 (6): 472-484.
- Tsoutsoura, M. 2004. Corporate Social Responsibility and Financial Performance. Working Paper, Hass School of Business, University of California, Berkeley, available at: < <http://escholarship.org/uc/item/111799p2> > , (Accessed on 30 August 2015).
- Uwuigbe, U., and B. Egbide. 2012. Corporate Social Responsibility Disclosures in Nigeria: A Study of Listed Financial and Non-Financial Firms. *Journal of Management and Sustainability* 2 (1): 160-169.
- Waddock, S. A., and S. B. Graves. 1997. The Corporate Social Performance-Financial Performance Link. *Strategic Management Journal* 18 (4): 303-319.

Murya S. Habbash is an Associate Professor of Accounting at Administrative and Financial Sciences School, King Khalid University, Abha, Saudi Arabia, P.O. Box 2742. His Ph. D. from Durham University, UK, 2010, focuses on corporate governance and earnings quality. His current research interests include corporate governance, audit quality, corporate social responsibility and earnings quality. (murya@hotmail.com)

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