Disclosure of Non-financial Material Sustainability Information: Evidence from Australian Listed Companies in the Materials Sector

Ashraf Al Mamun

Associate Professor, Bangladesh Institute of Bank Management (BIBM), Mirpur-2, Dhaka-1216, **BANGLADESH**
and
Ph.D. Candidate, Torrens University, **AUSTRALIA**

*E-mail for correspondence: mamun@bibm.org.bd

https://doi.org/10.18034/abr.v9i3.337

ABSTRACT

The broad objective of this paper is to measure the extent of disclosure of non-financial material sustainability information by Australian companies in the materials sector based on the GRI G4 guidelines. GRI G4 guidelines on economic, environmental, and social performance indicators are used based on 2014 and 2015 data to establish what constitutes non-financial material sustainability information by ASX listed Australian companies in the materials sector. The aggregate non-financial material sustainability disclosure is low for all companies in the materials sector. The findings show that a great degree of variation in sustainability disclosures exists among the listed Australian companies in the materials sector based on GRI G4 guidelines. The pattern of disclosure is similar for small-cap and medium-cap companies and they disclose less non-financial material sustainability information than large-cap companies. The sustainability score increased slightly in 2015 compared to 2014 for all companies and subgroup of companies based on market capitalization in aggregate as well as in economic, environmental, and social categories.

JEL Classification Code: Q56

Key words: Non-financial disclosure, material sustainability information, sustainability reporting, GRI guidelines, materiality

BACKGROUND OF THE STUDY

The company stakeholders are increasingly demanding the disclosure of sustainability issues (Tînjală, 2015) and sustainability reporting has become a progressively pertinent topic in the area of business and academia (Christofi et al., 2012). The generic term 'sustainability reporting', is used synonymously with 'Triple Bottom Line Reporting', 'Corporate Responsibility Reporting', 'Corporate Citizenship Report', and 'Community Report' (Milne and Gray, 2013). The present study uses the term 'sustainability report' for referring to mentioned variations of the term. The term 'reporting' and 'disclosure' are used in this study interchangeably. Many companies are recognizing the importance of non-financial sustainability disclosure, including economic, environmental, and social issues (Perez and Sanchez, 2009), in their annual reports as well as in stand-alone sustainability reports (Higgins et al., 2015; Patten and Zhao, 2014). Compared to companies' financial reporting, sustainability reporting is still in infancy (Tschopp and Huefner, 2015).

Increased disclosure of sustainability information by the firms through non-financial reporting helps renew the stakeholders' trust in them as well as allowing the stakeholders and capital market participants to make informed decisions and act as a communication tool (Lydenberg, 2012; Dhaliwal et al., 2012; Qiu et al., 2016; Cho et al., 2015; Higgins et al., 2015; Gray et al., 2014).

The materiality of disclosure is a relatively new concept in sustainability reporting, which focuses on the usefulness of the information being reported (Unerman and Zappepettini, 2014; Edgley et al., 2015). It is related to recognizing those economic, environmental, and social issues that matter most to a company as well as to its stakeholders. Materiality concept helps to distinguish between important information and insignificant immaterial information. The materiality reporting on sustainability issues plays an important role in enhancing the long-term value maximization of the companies by focusing on the most relevant issues (Porter and Kramer, 2006; Kyte, 2007) and avoids over-reporting and green

washing (Font et.al., 2016). It is the view by 25% of respondents of a worldwide survey conducted by KPMG and sustainability (2008) that the material issues are absent from the sustainability reports, and also the material issues are not treated with enough detail. Therefore, it is relevant to explore the context of materiality while considering the non-financial disclosure of companies' sustainability information.

There exists a large number of empirical studies (Moskowitz, 1972; Vance, 1975; Sturdivant and Ginter, 1977; Spicer, 1978; Abbott and Monsen, 1979; Chen and Metcalf, 1980; Cochran and Wood, 1984; Ullmann, 1985; Griffin and Mahon, 1997; Waddock and Graves, 1997; McWilliams and Siegel, 2000; Lin et al., 2009; Flammer, 2013; Lu and Taylor, 2015; Choi and Moon, 2016; Kang et al., 2016) on corporate social responsibility (CSR) and environmental, social and governance (ESG) which focus on how such information impacts company performance. These empirical studies have mainly been conducted on CSR reporting, analyzing disclosures that contained CSR issues and the relationship between CSR issues and company performance, but do not investigates the materiality of the information.

The aim of the present study which comprises 100 companies of the materials sector listed in the Australian Securities Exchange (ASX), is to identify and measure the non-financial material sustainability disclosures based on GRI G4 guidelines on economic, environmental and social performance aspects. A scoring index is developed following the disclosure-scoring methodology of Al-Tuwaijri et al. (2004) using content analysis. The analysis is based on the 2014 and 2015 data.

This paper proceeds with the conceptual discussions on the materiality of non-financial sustainability disclosure and the use of GRI guidelines are presented in Section 2 and Section 3 discusses the existing literature on non-financial disclosure of material sustainability information by Australian companies. Section 4 presents the methodology of the study, followed by findings and discussion of findings in Section 5. Section 6 presents the conclusions, implications, limitations, and future research scope.

THE MATERIALITY OF NON-FINANCIAL SUSTAINABILITY DISCLOSURE AND USE OF GLOBAL REPORTING INITIATIVE (GRI) GUIDELINES

In terms of non-financial sustainability disclosure three definitions for defining materiality have been developed by the Sustainability Accounting Standard Board (SASB), Global Reporting Initiative (GRI) and the International Integrated Reporting Council (IIRC). Definitions provided by the SASB, GRI and IIRC on materiality considering the non-financial disclosure context are presented below.

SASB Standards Implementation Guide for Companies: "SASB uses the U.S. Supreme Court's definition: "Information is material if there is 'a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of information made available" (SASB, 2016, p.7).

GRI G4 Sustainability Reporting Guidelines Implementation Manual: "Material aspects are those that reflect the organization's significant economic, environmental, and social impacts or that substantively influence the assessments and decisions of stakeholders. To determine if an aspect is material, qualitative analysis, quantitative assessment, and discussion are needed" (GRI, 2013b, p.244).

The International Integrated Reporting <IR> Council (IIRC) Framework for Materiality: "A matter is material if it is of such relevance and importance that it could substantially influence the assessments of providers of financial capital with regard to the organization's ability to create value over the short, medium, and long term" (IIRC, 2013, p. 2, available at. http://www.theiirc.org/wp-content/uploads/2013/03/IR-Background-Paper-Materiality.pdf).

By analyzing the definitions provided by SASB, GRI and IIRC of material non-financial sustainability information, it is clear that a company should report the material and relevant information to allow stakeholders to evaluate the organization's capacity to create value in the short, medium to long term.

This study uses the GRI G4 definition of materiality and guidelines for non-financial material disclosure because it is more comprehensive and widely used by companies all over the world (KPMG, 2015; Brown et al., 2009; Frost et al., 2005). While, Ball et al., (2006, p.268) note that, "GRI claims to provide the basis of worldwide standardized, comparable, reporting on the sustainability of (particularly business) organizations".

GRI introduced the sustainability reporting guidelines in 2000 and since then, there have been updated with the most recent (GRI G4) released in 2013. According to these guidelines, sustainability reporting "is a process that assists organizations in setting goals, measuring performance and managing change towards a sustainable global economy - one that combines long term profitability with social responsibility and environmental care" (GRI, 2013a, p. 85). The GRI G4 guideline consists of 91 specific standard disclosure and performance indicators related with economic, environmental, and social (labor practices and decent work, human rights, society, product responsibility) aspects of sustainability reporting.

The GRI G4 guidelines underscore the meaning of materiality in sustainability reporting and materiality is placed at the core of these guidelines. These guidelines are not merely a data-gathering exercise, rather, these guidelines focus only on the most important aspects (material aspects) of sustainability reporting. GRI in their G4 implementation manual posits, "The report should include coverage of material Aspects and their Boundaries, sufficient to reflect significant economic, environmental, and social impacts, and to enable stakeholders to assess the organization's performance in the reporting period", (Global Reporting Initiative, 2013b, p. 12).

EXISTING LITERATURE ON NON-FINANCIAL DISCLOSURE OF MATERIAL SUSTAINABILITY INFORMATION BY THE AUSTRALIAN COMPANIES

Several prior studies examine different aspects of non-financial sustainability disclosures of the Australian companies (Trotman & Bradley,1981; Deegan & Gordon, 1996; Deegan & Rankin, 1996; Tilt, 2001; Frost et al., 2005; Jones et al., 2007; Guthrie & Farneti, 2008; Tilt, 2008; Chen & Bouvain, 2009; Andrew & Wickham, 2010; Tilling & Tilt, 2010; Balatbat et al., 2012; Bachoo, et al., 2013; Galbreath, 2013; Higgins et al., 2015; Rao & Tilt, 2016; Lokuwaduge & Heenetigala, 2017). However, none of these studies considered the materiality of the non-financial disclosure of sustainability information. Research on disclosure of material non-financial information related to sustainability issues by companies in Australia and abroad are at a nascent stage and is an emerging and growing area. The few studies (Khan et al., 2016; Amel-Zadeh, 2016; Lins et al., 2016; Jones et al., 2016; Eccles et al., 2012) that have been conducted so far in this area are primarily in the US context. Only two studies (Font et al., 2016; and Ong et al. 2016) are related to disclosure of companies' non-financial material sustainability information in the Australian context.

A recent study (Font et al., 2016) analyses materiality of disclosure of non-financial issues for the cruise industry in Australia following the non-financial disclosure standard as mentioned in the GRI guidelines. It uses a materiality analysis approach of CSR which offers an indication of what is important to the stakeholders for meaningful sustainability disclosure. It finds that the cruise companies over-report the immaterial issues than the material issues. The other study (Ong et al., 2016) finds that there is a lack of a standardized reporting framework while reporting companies' sustainability information in Australia and Australian companies in the resources industry are producing minimal sustainability information with a great degree of variation. It finds that companies in the resources industry emphasized more on economic aspects than the environmental and social aspects when disclosing such information.

METHODOLOGY

Sample and its selection process

There were 2193 (as on 2016) listed companies in the ASX and of the 677 companies (30.9% of the ASX listed companies) fall under materials sector constituting the highest number among all sector and this sector has the highest contribution to the Australian GDP (measured by industry gross value added) among the twenty sectors reported for the Australian GDP estimates (Australian Bureau of Statistics 2015, p.36). Thus, the focus of the present study is on the materials sector considering the substantial contribution of the sector to the Australian economy. From these 677 companies, 100 companies are then randomly selected using the random number function in MS-Excel. A sample size of 100 ASX companies seems sufficiently large for the study (Bowerman et al., 2017, pp 334-335).

Defining subgroup of companies based on market capitalization

The selected companies are then sorted from the smallest to the largest based on their market capitalization in the year 2014. Company size can be measured based on the market capitalization (Khan et al. 2016; Frost et.al., 2005; Jones et al., 2007; Guthrie & Parker, 1990), total assets (Balatbat et al., 2012), total sales (Hillman & Keim, 2001), and total employees (Inoue & Lee, 2011). The studies mentioned here used company size differently, and there is no empirical indication about the use of any particular method of measuring company size (Galbreath, 2013). The present study classifies three subgroups (33 small-cap, 33 medium-cap, and 34 large-cap) based on market capitalization of the companies following the Commonwealth Bank of Australia and Westpac Bank's categorization (can be found in the banks' websites). The list of small, medium, and large-cap companies can be provided upon request.

Data source, data collection and period for analysis

The period of analysis is from 2014 to 2015. As the GRI G4 is introduced in May 2013, the analysis period covers non-financial material sustainability information reporting practices after the introduction of GRI G4 guidelines. The data is sourced from the company websites, which include annual reports, sustainability reports/reviews, workplace gender equality agency (WGEA) reports, environmental reports/reviews, and other publications.

Content analysis

This study applies content analysis to collect data about the non-financial material sustainability information from different annual reports and sustainability reports of the Australian listed companies in the materials sector. As "content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication" (Berelson, 1952, p.18). The

information is manually collected (following Khan et al., 2016) from the reports, and mapped to the GRI G4 guidelines to develop a scoring index for disclosure of non-financial material sustainability information.

Developing scoring index for non-financial disclosure of material sustainability information

The present study develops a scoring index based on the GRI G4 standard disclosures and performance indicators (Table 1) to compute non-financial material sustainability score for specific performance indicator following the disclosure-scoring methodology of Al-Tuwaijri et al., (2004). The present study denotes '1' for the presence of each performance indicator and '0' for the absence of any performance indicator of the GRI G4 guidelines. This gives a company score for each of the economic, environmental, and social aspects. This study then constructs a measure of aggregate sustainability score for each of the aspects for every company. After combining all three aspects (economic, environmental, and social) the study determines the "aggregate material sustainability score" for every company.

Table 1: Summary of GRI G4 Standard disclosures and performance indicators

Disclosure Category	Aspects	Subcategory score	Total Disclosures and score
Standard disclosures: Performance indicator	1. Economic (G4-EC 1 to EC 9)		9
	2. Environmental (G4-EN 1 to EN 34)		34
	3. Social		
	Social – Labor Practices and Decent Work (G4-LA 1 to LA 16)	16	
	Social – Human Rights (G4-HR 1 to HR 12)	12	
	Social – Society (G4-SO 1 to SO 11)	11	
	Social – Product Responsibility (G4-PR 1 to PR 9)	9	48
	Aggregate Score		91

Source: Global Reporting Initiative- GRI (2013b, pp.19-22).
Note: Presence of each indicator is scored 1, and absence is scored 0.

Table 1 shows the total number of GRI G4 disclosure and performance indicators by aspects (economic, environmental, and social) and aggregate. There are 9 economic, 34 environmental, and 48 social indicators, for a total of 91 aggregate indicators which provides a broad view of sustainability reporting by the companies included in the present study.

Reliability of scoring index

To ensure the accuracy, consistency, and reliability of the ratings derived by the primary researcher, this study uses two secondary raters (as validators, who are familiar with GRI G4 guidelines) to validate the non-financial disclosure score for materiality sustainability information. This study uses the percent agreement measure (McHugh, 2012) to see the degree of agreement among the raters' scores. There was a high percentage agreement among the raters, 83.33% to 100% which is in excess of the widely agreed acceptable interrater limit of 80% (McHugh, 2012).

FINDINGS AND DISCUSSION

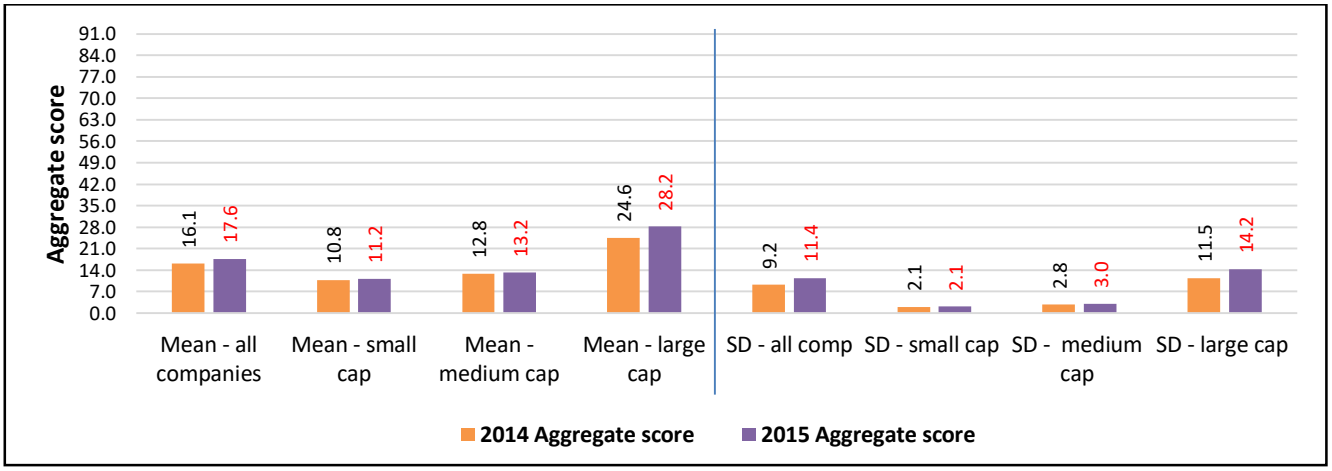
This section analyses the findings and discussion on aggregate non-financial material sustainability scores for all companies and subgroups of companies based on market capitalisation for the years 2014 and 2015.

Aggregate non-financial material sustainability score in 2014 and 2015

Figure 1 shows the mean and standard deviation of aggregate sustainability score in 2014 and 2015 for all companies as well as the three subgroups of companies based on market capitalization.

The mean aggregate sustainability score for all companies across 91 indicators is 16.1 in 2014 and 17.6 in 2015. Although the aggregate score is low in both 2014 and 2015, it is evident that the aggregate score increased slightly in 2015 compared to 2014. The standard deviation of the aggregate sustainability score for all companies (9.2 in 2014 and 11.4 in 2015) represents approximately 65 percent (SD/Mean) of the mean score for each year indicating a large variability relative to the mean score. While indicating the variability of scores across companies, in 2015 the majority (79%) companies achieve a disclosure score of 1 to 20, whereas, only 21% companies achieve a score of 21 or more. The pattern is also similar in 2014.

Figure 1: Mean score and SD of aggregate sustainability score for all companies and subgroups of companies based on market capitalization: 2014 and 2015



Note: Maximum possible aggregate score is 91; and SD = Standard deviation.

The mean aggregate sustainability scores of disclosures of the material sustainability information for small, medium, and large-cap companies, shown in Figure 1, are the highest for large-cap companies and the lowest for small-cap companies. The disclosure score for large-cap companies is about two times higher than the score for small and medium-cap companies. The pattern of observations between 2014 and 2015 for all companies is also evident in the three subgroups with slightly higher scores in 2015 than 2014.

Figure 1 shows that the standard deviations for small, medium, and large-cap companies in the 2014 are lower than the 2015 within each subgroup than for all companies considered together.

The analysis of the aggregate sustainability score of Australian materials sector shows that the overall non-financial reporting of material sustainability information for all companies is low in 2014 and 2015 which indicates a nascent stage of disclosure. This finding is consistent with previous researches (Tschopp & Huefner, 2015; Font et al., 2016 based on 2014 data; Frost et al., 2005, based on 2003 data; KPMG, 2016, based on 2015 data) that suggests that disclosure of sustainability information by Australian companies is generally low and still in its infancy. KPMG (2016) also found that a majority of Australian companies do not disclose material sustainability risks in their reporting structure even after the introduction of ASX Corporate Governance Council Principles and Recommendations 7.4 in 2014.

A reason behind the low level of non-financial disclosure of sustainability information for Australian companies may be that reporting sustainability information is primarily voluntary in Australia, and the Australian companies in this sector may not see benefits to this form of disclosure. If the requirement of non-financial disclosure were mandatory for Australian companies, then the companies will have the compulsion to disclose more sustainability information.

The current study also found that the standard deviation of the aggregate score for all companies relatively large, capturing large variability in the disclosure of material sustainability information. This finding is similar to findings reported by Ong et al., (2016) which shows the existence of large variation in the disclosure of sustainability information by Australian companies in the resources industry.

The analysis of the aggregate score also shows that the large-cap companies' aggregate score is much higher than the small and medium-cap companies. It also signifies that the non-financial disclosure of material sustainability information by Australian companies varies by company size based on market capitalization. This evidence is similar to previous research (Eilbert & Parket, 1973; Spicer, 1978; Watts & Zimmerman, 1978; Trotman & Bradley, 1981). Although these studies did not categorize the non-financial sustainability information as material, they found that company size is related to non-financial disclosure of sustainability information in Australia. Indeed, Trotman & Bradley (1981) noted, "Companies which provide social responsibility information are on average, larger in size, have a higher systematic risk and place a stronger emphasis on the long term than companies which do not disclose this information" (p. 361). The findings in the current study are also consistent with evidence from other countries. For instance, Dissanayake et al., (2016) found that the extent and quality of sustainability reporting significantly vary between the top 30 and bottom 30 Sri Lankan companies based on their market capitalization. Dissanayake et al. (2016) does not focus the sector-specific consideration, rather, they consider the top 30 listed companies, representing different sectors.

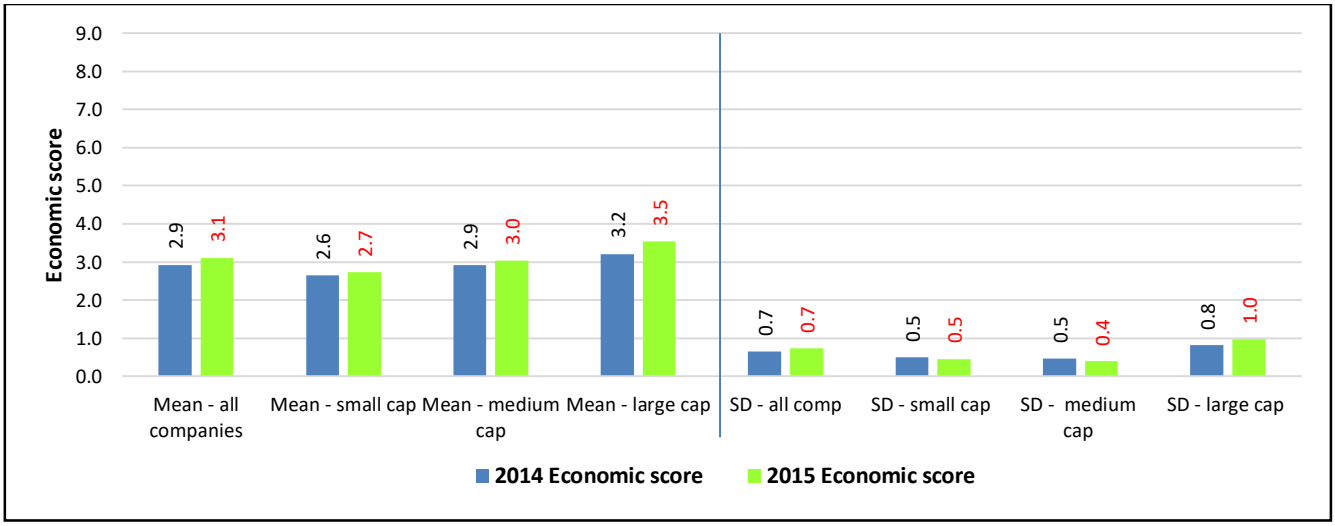
The current study found a slight increase in the disclosure of sustainability information between 2014 and 2015. This increase may be due to the fact that increased disclosure of sustainability information helps renew the trust of the stakeholders as well as allowing the stakeholders to make informed decisions (Lydenberg, 2012) and to meet the expectations of the society, and to socially legitimize the companies' operation to their stakeholder groups (Andrew & Wickham (2010).

Economic non-financial material sustainability score in 2014 and 2015

Figure 2 shows the mean and standard deviation of economic sustainability score in 2014 and 2015 for all companies as well as the three subgroups of companies based on market capitalization.

The mean economic sustainability score for all companies across 9 indicators is 2.9 in 2014 and 3.1 in 2015, which captures the relatively low average level of disclosure of economic indicators. Although the mean economic score is low in both 2014 and 2015, it is evident that the score increased slightly in 2015 compared to 2014. The standard deviation of the economic sustainability score for all companies (0.7 in 2014 and 2015) represents approximately 24 percent (SD/Mean) of the mean score for each year indicating a moderate variability relative to the mean score. In 2015, a majority (89%) of the companies achieve an economic disclosure score of 1-3, whereas, only 11% companies achieve a score between 4-6, and 7-9. The estimates are similar for 2014.

Figure 2: Mean score and SD of economic sustainability score for all companies and subgroups of companies based on market capitalization: 2014 and 2015



Notes: Maximum possible economic score is 9. SD = Standard deviation.

The mean economic sustainability scores of disclosures of material sustainability information for small, medium, and large-cap companies, shown in figure 2, are highest for large-cap companies and lowest for small-cap companies. Compared to 2014 all the subgroup of companies' economic sustainability score is slightly higher in 2015.

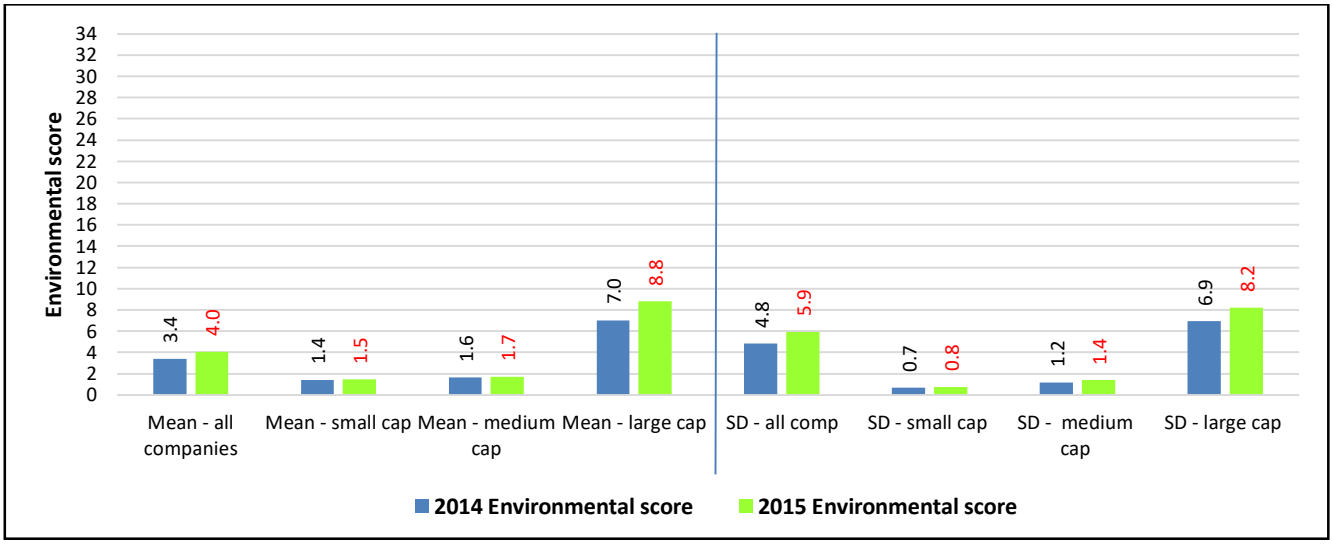
Figure 2 shows that the standard deviations for small and medium-cap companies remain almost similar in 2014 and 2015 but it creases in case of large-cap companies and indicates a moderate variability relative to the mean score. One-fourth of large companies' score is in a higher range than that of small and medium-cap companies' score in 2015. It shows a similar pattern in 2014.

Environmental non-financial material sustainability score in 2014 and 2015

Figure 3 shows the mean and standard deviation of environmental sustainability score in 2014 and 2015 for all companies as well as the three subgroups of companies based on market capitalization.

The mean environmental sustainability score for all companies across 34 indicators is only 3.4 in 2014 and 4.0 in 2015, which is substantially low. Although the mean environmental sustainability score is very low in both 2014 and 2015, it is evident that the score increased slightly in 2015 compared to 2014. The standard deviation of the environmental sustainability score for all companies (4.8 in 2014 and 5.9 in 2015) represents approximately 141 percent and 147 percent respectively (SD/Mean) of the mean score for each year indicating a large variability relative to the mean score. A majority (91%) of the companies achieve a disclosure score of 1-10, whereas only 9% companies achieve a score between 11-20, and 21 and above. The estimates have a similar pattern for 2014.

Figure 3: Mean score and SD of environmental sustainability score for all companies and subgroups of companies based on market capitalization: 2014 and 2015



Notes: Maximum possible environmental score is 34. SD = Standard deviation.

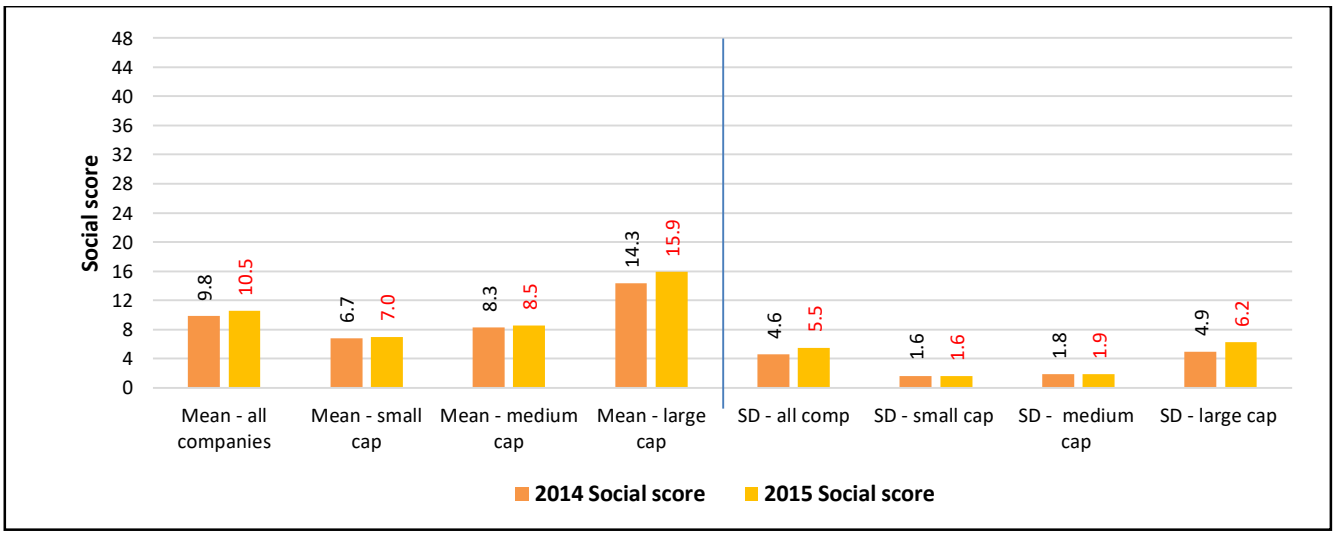
The mean environmental sustainability scores of disclosures of material sustainability information for small, medium, and large-cap companies, shown in figure 3, are highest for large-cap companies and lowest for small-cap companies. Compared to 2014 all the subgroup of companies' environmental sustainability score is slightly higher in 2015.

The standard deviation for small, medium and large-cap companies show (Figure 3) that the variability in the environmental score is highest for large-cap companies. The variation of the score indicates that 26 percent of large-cap companies are disclosing higher levels of environmental sustainability information than the small and medium-cap companies. This is also similar for 2014.

Social non-financial material sustainability score in 2014 and 2015

Figure 4 shows the mean and standard deviation of social sustainability score in 2014 and 2015 for all companies as well as the three subgroups of companies based on market capitalization.

Figure 4: Mean score and SD of social sustainability score for all companies and subgroups of companies based on market capitalization: 2014 and 2015



Note: Maximum possible social score is 48. SD = Standard deviation.

The mean social sustainability score for all companies across 48 indicators is 9.8 in 2014 and 10.5 in 2015. Although the social sustainability score is low in both 2014 and 2015, it is evident that it increased slightly in 2015

compared to 2014. The standard deviation of the social sustainability score for all companies (4.6 in 2014 and 5.5 in 2015) represents approximately 47 percent and 52 percent (SD/Mean) respectively of the mean score for each year indicating a large variability relative to the mean score. This is also underscored by the estimates, which shows that in 2015, the majority (71%) of the companies achieve a disclosure score of 1-10, whereas only 29% companies achieve a score between 11-20, and 21 and above. This pattern is also similar in 2014.

The mean social sustainability scores of disclosures of material sustainability information for small, medium, and large-cap companies, shown in figure 4, are highest for the large-cap companies and lowest for the small-cap companies. Compared to 2014 the subgroup of companies' environmental sustainability score is slightly higher in 2015, excepting small-cap companies, which remain unchanged.

The standard deviation for small, medium and large-cap companies show (Figure 4) that the variability in social sustainability score is highest for large-cap companies. The large-cap companies' score is relatively in much higher ranges compared to the small and medium-cap companies. The pattern is similar for 2014.

Figure 5 shows the composition of mean economic, environmental, and social sustainability score as a percentage of aggregate sustainability score (as achieved by each company period). The figure reports the statistics for all companies and subgroups of companies based on market capitalization in 2015.

Figure 5: Composition of mean economic, environmental and social sustainability score as percentage of aggregate sustainability score 2015

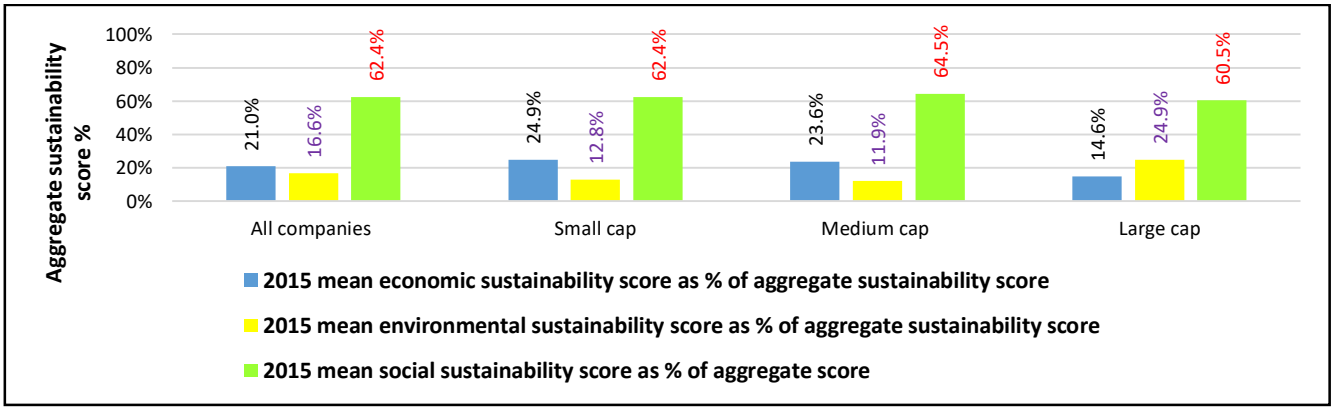


Figure 5 shows that in 2015 the companies are reporting the highest level on social indicators, followed by economic indicators, and environmental indicators (lowest level). This composition of disclosure on the economic, environmental, and social score was similar in 2014. The rationale of such disclosure may be on the ground that companies are challenged with the stakeholder claims in relation to economic, environmental and social issues (Steurer et al., 2005) through their stakeholder relations management.

The mean economic sustainability scores for 2014 and 2015 for all companies and for companies based on market capitalization suggest that the average level of disclosure among Australian listed companies in the materials sector is relatively low compared to the maximum possible economic score of 9. The variation of the economic score is also higher for large-cap companies compared to small and medium-cap companies. Notably, the mean score of economic indicators reported as the percentage of aggregate score reported is lowest for the large-cap companies.

Disclosure of environmental information by all companies irrespective of their size is the lowest with large variations. However, the disclosure on environmental indicators of the large-cap companies is nearly twice that of the small and medium-cap companies. The level of higher disclosure on environmental indicators by the large-cap companies may suggest that they are more concerned about disclosing on their environmental indicators than the smaller cap companies. The present study findings support the finding of another study, which states, "Big companies tend to disclose more environmental performance information compared with small companies" (Tiong & Anantharaman, 2011, p.14). An increase in environmental reporting may be due to the enforcement of environmental regulations by the Australian Government or increased awareness about these disclosures among the companies. O'Donovan (2002) found that the legitimacy theory has implications for the environmental disclosures. Because, legitimacy is considered as an important factor that affects environmental and social disclosures of a company (Cho et al., 2015). Further, the capital market participants are increasingly valuing companies with good environmental performance (Dhaliwal et al., 2012; Qiu et al., 2016).

When considering the social sustainability disclosure, all the companies are disclosing their highest level of disclosure in both the years 2014 and 2015. Companies'

disclosure on the social indicators is highest may be due to attain acceptability in the society (Dowling & Pfeffer, 1975), legitimise their activities (Dowling & Pfeffer, 1975; Guthrie & Parker, 1989; Campbell et al., 2003; Tilling, 2004; Cho et al., 2015) gain competitive advantage (O'Donovan, 2002), and avoid social punishment (Faisal et al., 2012).

Conclusions, Implications, Limitations, and Future Research

This paper addresses the extent of disclosure of non-financial material sustainability information of the Australian listed companies in the materials sector based on GRI G4 guidelines (introduced in 2013). It gives a sector-specific finding on disclosure of non-financial material sustainability information for the Australian companies. In general, the extent of aggregate non-financial material sustainability disclosure, as well as disclosure on economic, environmental, and social information, is low for all companies with a great degree of variations. Although the sustainability score is low in both 2014 and 2015, it is evident that the score increased slightly in 2015 compared to 2014.

Findings from the analysis of aggregate sustainability scores by subgroups of companies based on market capitalization show that the large-cap companies are disclosing more than the small and medium-cap companies. At the same time, the large-cap companies have greater variations (standard deviation) in score than the small and medium-cap companies. In most cases, the disclosure pattern is similar both for the small-cap and medium-cap companies. These findings suggest that company size is associated with the level of disclosure of non-financial material sustainability information. Note that, irrespective of the company size, all companies disclosed more on social indicators than economic or environmental indicators. Also, disclosures on environmental indicators by small and medium-cap companies are lower than that by large-cap companies.

The current study fills a gap in the literature regarding the extent of non-financial disclosure of sustainability information by Australian companies that are material to their industry. The present study uses a comprehensive approach to disclosure of non-financial material sustainability information by considering the economic, environmental, and social aspects simultaneously for Australian companies in the materials sector.

Disclosure of sustainability information is not mandatory in Australia but there is growing recognition (Nolan, 2007; Overland, 2007; and Thirarungrueang, 2013) that mandatory disclosure might be important. The current study provides evidence that the existing voluntary regime for reporting of sustainability information that is material to an industry is not resulting in high level of disclosures by listed companies. Although there might be a debate about the mandatory requirement of sustainability reporting in Australia, the Federal Government may rethink this and take a more vigilant and robust approach to promote non-financial material sustainability information reporting by Australian companies. Moreover, as global economic bodies (such as the World Economic Forum, OECD) and global business leaders are recognizing the business case for supporting the issue of sustainability, the disclosure of non-financial material sustainability information by Australian companies may become a competitive factor in the coming years.

Findings from the present study may provide insights for policymakers and corporate leaders in Australia for decisions regarding expansion of reporting requirements. The companies may increase their non-financial material sustainability information by following a more combined disclosure approach on economic, environmental and social sustainability information. The Australian companies may enjoy many benefits by disclosing non-financial material sustainability information to their stakeholders: such as an increase in investors' confidence, improved efficiency in investor communication, enhanced coordination inside and outside the organization, as well as strong market reputation and leadership (Ernst & Young, 2014). In addition, the disclosure of information that is material to the company's sector or industry can be a win-win situation for the company and its stakeholders (Eccles & Krzus, 2014). By using the GRI G4 guidelines as a benchmark for reporting of non-financial material sustainability information, which is widely used in different countries of the world and serves as the foundation for the paper, the Australian companies might be able to enhance their acceptability among different stakeholders.

As this study develops a comprehensive non-financial material sustainability disclosure scoring index combining economic, environmental and social indicators, the future research may enhance its validity for an evaluation tool in case of non-financial material sustainability disclosure. This may help to develop a better understanding of the non-financial material sustainability reporting.

The study uses two years (2014 and 2015) of data to capture the extent of the non-financial material sustainability information by the Australian listed companies in the materials sector, which may be insufficient to capture the trend. A longitudinal study could help to understand the trend of such disclosures. This study only focuses on the extent of disclosure (not the aspect of disclosure quality) and it does not link the disclosure score with the companies' other characteristics such as financial performance, age, corporate governance, and other issues. Future researches can be undertaken to explore the causal link between different company characteristics and non-financial material sustainability disclosure. Moreover, future researches may explore the possibility of undertaking comparative study among different sectors of the Australian listed companies in this regard. Moreover, a comparative study can be conducted to see the variation in other countries' context.

ACKNOWLEDGMENTS

This study is funded by the "Australian Government Research Training Program (RTP) Scholarship".

REFERENCES

Abbott, W. F., and Monsen, R. J. (1979). On the measurement of corporate social responsibility: Self-reported disclosures as a method of measuring corporate social involvement. *Academy of Management Journal*, 22(3), 501-515.

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

Amel-Zadeh, A. (2016). The Materiality of Non-financial Information: A Review of Theory and Empirical Evidence on Sustainability Disclosures, Corporate Social Responsibility, and Responsible Investing. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2664547

Andrew, N. L., & Wickham, M. (2010). The voluntary CSR disclosure in corporate annual reports: Evidence from Australia. *Corporate Ownership & Control*, *8*(1), 49-55.

ASX Corporate Governance Council. (2014). *Corporate Governance Principles and Recommendations,* Third edition. Available at: http://www.asx.com.au/documents/asx-compliance/cgc-principles-and-recommendations-3rd-edn.pdf

Australian Bureau of Statistics (ABS). (2015). *Australian National Accounts: National Income, Expenditure and Product, 5206.0.* Available at: http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5206.0Dec%202015?OpenDocument

Bachoo, K., Tan, R., and Wilson, M. (2013). Firm value and the quality of sustainability reporting in Australia. *Australian Accounting Review*, *23*(1), 67-87.

Balatbat, M., Siew, R., and Carmichael, D. (2012). ESG scores and its influence on firm performance: Australian evidence. In *the Australian School of Business School of Accounting, School of Accounting Seminar Series Semester* (Vol. 2).

Ball, A., Broadbent, J. and Jarvis, T. (2006), Waste management, the challenges of the PFI and sustainability reporting. Business Strategy and the Environment, 15, 4, pp. 258–274.

Berelson, B. (1952). *Content analysis in communications research*. Glencoe, Illinois. The Free Press. Pp. 220.

Bowerman, B. L. O'Connel, R. T., & Murphree, E. S. (2017). *Business Statistics in Practice: Using Data, Modeling, and Analysis*. 8th edition. McGraw-Hill Higher Education.

Brown, H., de Jong, M., and Levy, D. (2009). Building institutions based on information disclosure: Lessons from GRI's sustainability reporting. *Journal of Cleaner Production*, 17(6), 571–580.

Campbell, D., Craven, B., & Shrives, P. (2003). Voluntary social reporting in three FTSE sectors: a comment on perception and legitimacy. *Accounting, Auditing & Accountability Journal*, *16*(4), 558-581.

Chen, K. H., and Metcalf, R. W. (1980). The relationship between pollution control record and financial indicators revisited. *The Accounting Review*, *55*(1), 168-177.

Chen, S., & Bouvain, P. (2009). Is corporate responsibility converging? A comparison of corporate responsibility reporting in the USA, UK, Australia, and Germany. *Journal of Business Ethics*, *87*(1), 299-317.

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

Choi, H., and Moon, D. (2016). Perceptions of Corporate Social Responsibility in the Capital Market. *Journal of Applied Business Research (JABR)*, *32*(5), 1507-1518.

Christofi, A., Christofi, P., & Sisaye, S. (2012). Corporate sustainability: historical development and reporting practices. *Management Research Review*, *35*(2), 157-172.

Cochran, P. L., and Wood, R. A. (1984). Corporate social responsibility and financial performance. *Academy of Management Journal*, *27*(1), 42-56.

Deegan, C. and Gordon, B. (1996). A study of the environmental disclosure practices of Australian corporations. *Accounting and Business Research, 26*(3), 187-199.

Deegan, C. and Rankin, M. (1996). Do Australian companies report environmental news objectively? An analysis of environmental disclosures by firms prosecuted successfully by the Environmental Protection Authority. *Accounting, Auditing & Accountability Journal, 9*(2), 50-67.

Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., and Yang, Y. G. (2012). Non-financial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review*, *87*(3), 723-759.

Dissanayake, D., Tilt, C., & Xydias-Lobo, M. (2016). Sustainability reporting by publicly listed companies in Sri Lanka. *Journal of Cleaner Production*, *129*, 169-182.

Dowling, J. and Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. *Pacific Sociological Review, 18*(1), 122-136.

Eccles, R. G., and Krzus, M. P. (2014). Chapter 6, The Sustainable Value Matrix. *The integrated reporting movement: Meaning, momentum, motives, and materiality*. John Wiley & Sons.

Eccles, R. G., Krzus, M. P., Rogers, J., and Serafeim, G. (2012). The Need for Sector-Specific Materiality and Sustainability Reporting Standards. *Journal of Applied Corporate Finance*, 24(2), 65-71.

Edgley, C., Jones, M. J., and Atkins, J. (2015). The adoption of the materiality concept in social and environmental reporting assurance: A field study approach. *The British Accounting Review*, *47*(1), 1-18.

Eilbert, H. & Parket, I. R. (1973). The Current Status of Corporate Social Responsibility, *Business Horizons*, pp. 5-14.

Ernst and Young. (2014, p.2). Disclosure effectiveness - What companies can do now. *Ernst and Young Global Limited.* Available at: http://www.ey.com/publication/vwluassets/ey-disclosure-effectiveness-what-companies-can-do-now/$file/ey-disclosure-effectiveness-what-companies-can-do-now.pdf

Faisal, F., Tower, G., & Rusmin, R. (2012). Legitimizing corporate sustainability reporting throughout the world. *Australasian Accounting Business & Finance Journal*, *6*(2), 19.

Flammer, C. (2013). Corporate social responsibility and shareholder reaction: The environmental awareness of investors. *Academy of Management Journal*, *56*(3), 758-781.

Font, X., Guix, M., and Bonilla-Priego, M. J. (2016). Corporate social responsibility in cruising: Using materiality analysis to create shared value. *Tourism Management*, *53*, 175-186.

Frost, G., Jones, S., Loftus, J. and Laan, S. (2005). A survey of sustainability reporting practices of Australian reporting entities. *Australian Accounting Review, 15*(1), 89-96.

Galbreath, J. (2013). ESG in focus: The Australian evidence. *Journal of Business Ethics, 118*(3), 529-541.

Global Reporting Initiative. (2013a). GRI G4 reporting principles and standard disclosures. Available at: https://www.globalreporting.org/resourcelibrary/GRIG4-Part1-Reporting-Principles-and-Standard-Disclosures.pdf

Global Reporting Initiative. (2013b). GRI G4 implementation manual. Available at: https://www.globalreporting.org/resourcelibrary/GRIG4-Part2-Implementation-Manual.pdf

Gray, R. H.; Adams, C. A. & Owen, D. (2014) *Accountability, Social Responsibility, and Sustainability. Accounting for Society and the Environment*. United Kingdom: Pearson Education Limited.

Griffin, J. J., and Mahon, J. F. (1997). The corporate social performance and corporate financial performance debate: Twenty-five years of incomparable research. *Business & Society*, 36(1), 5-31.

Guthrie, J. and Parker, L. (1990). Corporate social disclosure practice: A comparative international analysis. *Advances in Public Interest Accounting, 3*, 159-175.

Guthrie, J., and Farneti, F. (2008). GRI sustainability reporting by Australian public sector organizations. *Public Money and Management*, *28*(6), 361-366.

Guthrie, J., and Parker, L. D. (1989). Corporate social reporting: a rebuttal of legitimacy theory. *Accounting and Business Research*, *19*(76), 343-352.

Higgins, C., Milne, M. J., and van Gramberg, B. (2015). The uptake of sustainability reporting in Australia. *Journal of Business Ethics*, *129*(2), 445-468.

Hillman, A.J., and Keim, G.D. (2001). Shareholder value, stakeholder management, and social issues: what's the bottom line? *Strategic Management Journal*, 22(2), 125-139.

IIRC, 2013, p. 2, available at. http://www.theiirc.org/wp-content/uploads/2013/03/IR-Background-Paper-Materiality.pdf).

Inoue, Y., and S. Lee. (2011). Effects of different dimensions of corporate social responsibility on corporate financial performance in tourism-related industries. *Tourism Management* 32 (4): 790-804.

International Integrated Reporting Council. (2013). Materiality Background Paper For <IR>. Available at: http://www.theiirc.org/wp-content/uploads/2013/03/IR-Background-Paper-Materiality.pdf

Jones, P., Comfort, D., & Hillier, D. (2016). Materiality in corporate sustainability reporting within UK retailing. *Journal of Public Affairs*, *16*(1), 81-90.

Jones, S., Frost, G., Loftus, J., and Laan, S. (2007). An empirical examination of the market returns and financial performance of entities engaged in sustainability reporting. *Australian Accounting Review*, *17*(41), 78-87.

Kang, C., Germann, F., & Grewal, R. (2016). Washing Away Your Sins? Corporate Social Responsibility, Corporate Social Irresponsibility, and Firm Performance. *Journal of Marketing*, *80*(2), 59-79.

Khan, M., Serafeim, G., and Yoon, A. (2016). Corporate sustainability: First evidence on materiality. *The Accounting Review*, *91*(6), 1697-1724.

KPMG and Sustainability (2008). Count me in: the reader's take on sustainability reporting. Available at https://www.globalreporting.org/resourcelibrary/Count-Me-In-The-Readers-take-on-Sustainability-Reporting.pdf

KPMG International Cooperative (2016). *ASX Corporate governance council. Adoption of third edition corporate governance principles and recommendations, analysis of disclosures for financial years ended between 1 January 2015 and 31 December 2015.* Available at: http://www.asx.com.au/documents/asx-compliance/asx-corp-governance-kpmg-report.pdf

KPMG International Cooperative. (2015). *Currents of change: The KPMG survey of corporate responsibility reporting 2015*.

Kyte, R. (2007). Balancing rights with responsibilities: looking for the global drivers of materiality in corporate social responsibility and the voluntary initiatives that develop and support them. *American University International Law Review, 23*, 559.

Lin, C. H., Yang, H. L., and Liou, D. Y. (2009). The impact of corporate social responsibility on financial performance: Evidence from business in Taiwan. *Technology in Society*, *31*(1), 56-63.

Lins, K. V., Servaes, H., and Tamayo, A. (2016). Social capital, trust, and firm performance: the value of corporate social responsibility during the financial crisis. *The Journal of Finance*.

Lokuwaduge, C. S. D. S., & Heenetigala, K. (2017). Integrating environmental, social and governance (ESG) disclosure for sustainable development: an Australian study. *Business Strategy and the Environment*, *26*(4), 438-450.

Lu, W., & Taylor, M. E. (2015). Which Factors Moderate the Relationship between Sustainability Performance and Financial Performance? A Meta-Analysis Study. *Journal of International Accounting Research*, *15*(1), 1-15.

Lydenberg, S. (2012). On materiality and sustainability: The value of disclosure in the capital markets. *Cambridge, MA: Initiative for Responsible Investment.* Available at: http://www.sasb.org/wp-content/uploads/2012/10/On-Materiality-and-Sustainability.pdf

Mamun, A. A. (2018). Materiality of Non-financial Sustainability Disclosures: Implications for the Business Enterprises in Bangladesh. *Asian Business Review*, 8(3), Art. #20, pp. 143-152. https://doi.org/10.18034/abr.v8i3.166

McHugh, L. Mary. (2012). Interrater reliability: the kappa statistic. *CaliforniaBiochemia medica,* Vol. 22 (3). 276-282. Department of Nursing, National University, Aero Court, San Diego.

McWilliams, A., & Siegel, D. (2000). Corporate social responsibility and financial performance. *Strategic Management Journal*, *21*(5), 603-609.

Milne, M. J., & Gray, R. (2013). W(h)ither ecology? The triple bottom line, the global reporting initiative, and corporate sustainability reporting. *Journal of business ethics*, *118*(1), 13-29.

Moskowitz, M. (1972). Choosing socially responsible stocks. *Business and Society Review*, *1*(1), 71-75.

Nolan, J. (2007). Corporate Accountability and Triple Bottom Line Reporting: Determining the Material Issues for Disclosure. *UNSW Law Research Paper No. 2007-15. Enhancing Corporate Accountability: Prospects and Challenges Conference Proceedings,* pp.181-210. Available at https://ssrn.com/abstract=975414.

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

Ong, T., Trireksani, T., and Djajadikerta, H. G. (2016). Hard and soft sustainability disclosures: Australia's resources industry. *Accounting Research Journal*, *29*(2), 198–217.

Overland, J. (2007). Corporate social responsibility in context: the case for compulsory sustainability disclosure for listed public companies in Australia? *Macquarie Journal of International and Comparative Environmental Law*, Vol. 4 No. 2, pp. 1-22.

Parket, I. R., & Eilbirt, H. (1975). The practice of business social responsibility: the underlying factors. *Business Horizons*, *18*(4), 5-10.

Patten, D. & Zhao, N. (2014). Standalone CSR reporting by U.S. retail companies. *Accounting Forum, 38*(2), 132-144.

Perez, F., and Sanchez, L. E. (2009). Assessing the evolution of sustainability reporting in the mining sector. Environmental Management, 43(6).

Porter, M. E., & Kramer, M. R. (2006). Strategy and society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, *84*(12), 78-92.

Qiu, Y., Shaukat, A., and Tharyan, R. (2016). Environmental and social disclosures: Link with corporate financial performance. *The British Accounting Review*, *48*(1), 102-116.

Rao, K., & Tilt, C. A. (2016). Board diversity and CSR reporting: an Australian study. *Meditari Accountancy Research*, *24*(2), 182-210.

Spicer, B. H. (1978). Investors, corporate social performance and information disclosure: An empirical study. *Accounting Review*, 94-111.

Steurer, R., Langer, M. E., Konrad, A., and Martinuzzi, A. (2005). Corporations, stakeholders and sustainable development I: a theoretical exploration of business-society relations. *Journal of Business Ethics*, *61*(3), 263-281.

Sturdivant, F. D., and Ginter, J. L. (1977). Corporate social responsiveness: Management attitudes and economic performance. *California Management Review*, *19*(3), 30-39.

Sustainability Accounting Standards Board (SASB). (2016). *Conceptual framework of the Sustainability Accounting Standards Board*. Available at: Available at http://www.sasb.org/wp-content/uploads/2016/04/SASB-Conceptual-Framework-04.04.2016.pdf

Thirarungrueang, K. (2013). Rethinking CSR in Australia: time for binding regulation? *International Journal of Law and Management*, *55*(3), 173-200.

Tilling, M. V. (2004). *Refinements in Legitimacy Theory in Social and Environmental Accounting*. Commerce Research Paper Series No. 04-6. School of Commerce, Flinders University.

Tilling, M. V., & Tilt, C. A. (2010). The edge of legitimacy: Voluntary social and environmental reporting in Rothmans' 1956-1999 annual reports. *Accounting, Auditing & Accountability Journal*, *23*(1), 55-81.

Tilt, C. A. (2001). The content and disclosure of Australian corporate environmental policies. *Accounting, Auditing & Accountability Journal*, *14*(2), 190-212.

Tilt, C. A. (2008). Environmental disclosure outside the annual report. *International Journal of Management and Decision Making*, *9*(3), 288-309.

Tînjală, D. M. (2015). 2010-2014: A Comparative Evolution of Sustainability Reporting in Europe and the USA. *Timisoara Journal of Economics and Business*, *8*(1s), 47-69.

Tiong, P. N., and Anantharaman, R. N. (2011). An examination of the sustainability disclosures of ANZ, NAB, and Westpac. *JASSA*, (3), 12.

Trotman, K. T., & Bradley, G. W. (1981). Associations between social responsibility disclosure and characteristics of companies. *Accounting, organizations and society*, *6*(4), 355-362.

Tschopp, D., & Huefner, R. J. (2015). Comparing the Evolution of CSR Reporting to that of Financial Reporting. *Journal of Business Ethics*, *127*(3), 565-577.

Ullmann, A. A. (1985). Data in search of a theory: A critical examination of the relationships among social performance, social disclosure, and economic performance of US firms. *Academy of Management Review*, *10*(3), 540-557.

Unerman, J., and Zappettini, F. (2014). Incorporating materiality considerations into analyses of absence from sustainability reporting. *Social and Environmental Accountability Journal*, *34*(3), 172-186.

Vance, S. C. (1975). Are socially responsible corporations' good investment risks? *Management review*, *64*(8), 19-24.

Waddock, S. A., and Graves, S. B. (1997). The corporate social performance-financial performance link. *Strategic Management Journal*, 303-319.

Watts, R. L. & Zimmerman, J. L. (1978). Towards a Positive Theory of the Determination of Accounting Standards. *The Accounting Review*. pp. 112-134.

--0--