

## The Influence of Sustainability Performance Management Practices on Organisational Sustainability Performance

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## **Journal of Accounting & Organizational Change**

### **Emerald Article: The Influence of Sustainability Performance Management Practices on Organisational Sustainability Performance**

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# Article Title Page

## The Influence of Sustainability Performance Management Practices on Organisational Sustainability Performance

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### Structured Abstract:

**Purpose:** This study investigates the relationship between organisations' sustainability performance management practices and sustainability performance.  
**Design/Methodology/Approach:** Data for the study were collected from 314 medium to large organisations operating in Australia. A mailed printed questionnaire was used to collect the data. Personal interviews with 20 senior executives were conducted to pilot test and refine the questionnaire.  
**Findings:** The results indicate the organisations apply eight sustainability performance management practices (SPMPs) to improve seven different sustainability performance indicators (SPIs). Each of the eight SPMPs is positively associated with at least one or more SPIs. We find that customer value, new product development and information capital performance indicators are each associated with a single SPMP, while the other four performance indicators (environmental, employee value, social responsibility, and financial performance) are each associated with multiple SPMPs. Overall, the results indicate that increasing the level of an organisation's focus on its individual SPMPs is positively associated with its better performance under one or more SPIs.



**Research/Practical implication:** The study provides a statistically tested framework that can be used for further research investigating the relationships between different SPMPs and SPIs in different contexts and industries, thereby, contribute towards a better understanding of sustainability performance-related issues. We believe the results and the framework may be beneficial to company management in terms of better understanding and prioritising which SPMPs are relatively more important, and therefore should be initiated first. Our results indicate that not all of the eight SPMPs are equally important; some SPMPs are positively associated with more SPIs than others, thereby indicating the relative importance of specific SPMPs.

**Originality/value:** This study provides empirical evidence concerning which SPMPs are positively associated with particular SPIs. A framework of the identified SPMPs and SPIs is developed with a view towards promoting future research and practical applications to foster organisational sustainability performance.

**Keywords:** Sustainability performance management practices, organisational sustainability performance

**JEL classification code:** M41, M48

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**Running Heads:**

## **1. Introduction**

In recent times there has been a growing awareness of environmental issues (Ferreira, Moulang, and Hendro, 2010), rising costs and penalties associated with environmental damage, and increasing demand for investments in environmentally friendly processes and products (Burritt, Hahn, and Schaltegger, 2002; Bartolomeo, et al., 2000). This has precipitated increased stakeholder' pressure on organisations to manage corporate activities directed at achieving sustainable corporate performance.

In response to this stakeholder concern, many organisations have introduced Strategic Performance Measurement Systems (SPMS), which have attracted considerable interest in practice as well as in theory over the last two decades. A great deal of literature on multi-perspective performance measurement systems (which include the Balanced Scorecard), has been published dealing with how the various dimensions of non-financial measurement may contribute either directly or indirectly to performance outcomes (see Bedford, Brown, Malmi and Sivabalan, 2008; Malmi, 2001; Mooraj, Oyon, and Hostettler 1999; Ittner, Larcker and Randall, 2003; Hoque and James, 2000).

Various conceptual frameworks of SPMS have been put forward in the accounting literature (Otley, 2009; Ferreira and Otley, 2009). Pinheiro de Lima, Gouvea da Costa, and Angelis (2008) compiled a list of eight (8) structural roles of SPMS that have been identified by different authors. These roles include facilitating change in order to contribute to the realisation of the strategic vision, providing a closer understanding of customer needs, ensuring the measures cover the short, medium and long term perspectives, articulating strategy, and monitoring results.

The current study seeks to develop a more comprehensive model of corporate sustainability by examining how an organisation's individual sustainability performance management practices (SPMPs) relate to the organisation's sustainability performance indicators (SPIs). For the

purposes of this study, corporate sustainability performance is defined as a dynamic process that requires achieving short-term performance (meeting current needs) without compromising the long-term performance (future needs) (Hansen and Mowen, 2005; Horngren, Datar, Foster, Rajan, Ittner, Wynder, Macguire, and Tan, 2011).

The literature suggests that managing the interests of various stakeholder groups as part of an organisation's practices should have a positive association with corporate sustainability ie there should be some nexus between sustainability practices and sustainability performance (Kennerley and Neely, 2003; Kaplan and Norton 2004; Lohman, Fortuin, and Wouters, 2004; Henry, 2006). Accordingly, the main research question of this study is:

*Which sustainability performance management practices are associated with organisational sustainability performance indicators?*

The paper proceeds as follows. First, we provide a review of the literature followed by the development of hypotheses. The next section describes the method, which is followed by the results, discussion and a conclusion. Finally, we identify the main limitations of the study and directions for further research.

## **2. Literature review and hypothesis development**

Wilson (2003) suggests that sustainable development is necessary for corporate sustainability while stakeholder theory and corporate accountability theory underpin such sustainability. Stakeholder theory is one of the most important theories underpinning corporate sustainability since it takes into account the interest, rights and needs of different stakeholders of a business as an effective way of inculcating socially responsible behaviour among organisations (Dawkins and Lewis, 2003; Maignan and Ferrell, 2004; Ruf, Muralidhar, Brown, Janney, and Paul, 2001). Freeman (1984) defines "stakeholder" as any group or individual who can affect

or is affected by organisation's activities and objectives. Two types of stakeholders are identified -primary and secondary. In order to receive stakeholders' continued goodwill and support, it is necessary for organisations to identify and address the needs, demand and interest of their various stakeholder groups (Griffin, 2002; Maignan, 2001; Peterson, 2004).

The stakeholder approach to corporate sustainability takes into account the multi-fiduciary obligations of corporations by recognising that their responsibilities go beyond the shareholder-management relationship (Goodpaster, 2001). Accordingly, the extent to which management recognise their responsibility for meeting and satisfying the needs and demands of their different stakeholders' interests will have direct effects on their overall corporate sustainability (Greenwood, 2001). However, research examining what stakeholders think about socially responsible or irresponsible business practices remains scarce (Maignan and Ferrell, 2004). In particular, investigations have been limited to understanding the interests of primary stakeholders such as customers, managers, and employees (Maignan, 2001; Maignan and Ferrell, 2004). In addition, there are very few studies that have examined (from a corporate sustainability perspective) how managing key stakeholders' interests drive corporate sustainability performance (Neely, Adams and Kennerley, 2002). This study focuses on addressing this issue.

Following the recent literature on sustainability (Burritt, et al., 2002; Bartolomeo, et al., 2000; Ferreira, et al 2010), and the BSC framework (Kaplan and Norton, 1992), this study recognises literature that emphasises the importance of corporate social responsibility (CSR) by either incorporating it as the fifth perspective of the balanced scorecard (sustainability balanced scorecard) or by incorporating it into the existing four balanced scorecard perspectives (Kaplan and Norton 1996; Figge, Hahn, Schaltegger, and Wagner, 2002; Hansen and Mowen, 2005, Buytendijk and O'Rourke, 2008, Horngren, et.al. 2011). In order to attain the overall goal of improving sustainability performance, an organisation needs to (1) translate its overall objectives into specific practices for each key area of performance, and (2) specify

measurement indicator(s) to assess actual achievement of the practices for each identified key performance area. For this study, the specific key performance areas comprise various sustainability performance management practices (SPMPs) and the indicators used for assessing achievement related to the practices consist of several sustainability performance indicators (SPIs).

Based on the relevant literature and using anecdotal evidence from practice, we propose a framework for assessing the success of an organisation in achieving its objective(s) in each identified area of SPMPs. Figure 1 presents eight SPMPs that we have identified from the literature, together with seven corresponding SPIs as measures of achievements of the objectives of relevant SPMPs. We follow the framework to develop the hypotheses and test them empirically. Thus, our study provides a framework (Figure 1) of the identified SPMPs and SPIs which can act as a basis for future research on organisational sustainability performance-related issues, and for practical application to foster organisational sustainability performance.



**Figure 1**

<b>Organisational SPMPs and SPIs</b>	
<b>Sustainability performance management practices (SPMPs)</b>	<b>Sustainability performance indicators (SPIs)</b>
1. Environmental management practices (EMPs)	1. Environmental performance (EP)
2. Social responsibility practices (SRPs)	2. Employee value performance (EVP)
3. Internal process improvement practices (IPIPs)	3. Customer value performance (CVP)
4. Customer focus practices (CFPs)	4. Social responsibility performance (SRP)
5. Product innovation practices (PIPs)	5. New product development performance (NPDP)
6. Process and employee effectiveness practices (PEEPs)	6. Information capital effectiveness performance (ICEP)
7. Profitability and cash flow improvement practice (PCFIPs)	7. Financial performance (FP)
8. Capital Utilisation Management Practice (CUMPs)	

It should be noted that a considerable amount of research has been carried out in the social and environmental accounting area during the last three decades. An extensive search of the literature reveals four streams of research studies. The first stream concerns the development and theoretical understanding of relevant concepts such as corporate social responsibility performance management and environmental performance management. Examples of such research are Maria-Gaia (2011) and Lehman (2011). The second stream focuses on empirically investigating the relationship between the application of environmental accounting and organisational performance. Examples of such studies are Rahahleh (2011) and Ferreira, et al (2010). The third stream concentrates on empirically investigating the relationship between social responsibility activities and organisational performance. Examples of this stream of research are Garcia-Castro, Arino, and Canela (2010), and Gallego-Álvarez, Prado-Lorenzo,

Rodríguez-Domínguez, and García-Sánchez (2010). Finally, the fourth stream focuses on empirically investigating the relationship between environmental management activities and organisational performance. Examples of such research are Dawkins and Fraas (2011), and Haverkamp, Bremmers, and Omta (2010).

As discussed earlier, the stakeholder approach to corporate sustainability takes into account the multi-fiduciary obligations of corporations by recognising that their responsibilities go beyond the shareholder-management relationship (Goodpaster, 2001). Accordingly, the extent to which management recognise their responsibility for meeting and satisfying the needs and demands of their different stakeholders' interests will have direct effects on their overall corporate sustainability (Greenwood, 2001). Therefore, research on improving understanding of how to facilitate corporate sustainability ought to be comprehensive. Yet, the extant literature indicates that the focus of previous research on corporate sustainability is rather narrow, that is, instead of investigating the multiple factors affecting corporate sustainability, the research has been concentrated mainly on enterprises' environmental management and social responsibility activities. Consequently, there are gaps in our current understanding of corporate sustainability and the factors affecting it. By incorporating the eight different factors that affect corporate sustainability, together with seven different indicators to evaluate an enterprise's success in managing its sustainability (as shown in Figure 1), this study seeks to address a knowledge gap in the literature.

### ***Development of hypotheses***

For this study, we develop a definition<sup>1</sup> for each of the sustainability management practices (SPMPs) and sustainability performance indicators following the extant literature and the anecdotal evidence collected during our personal interviews with 20 senior executives (e.g., Chief Financial officers) of medium to large organisations. The interviews were conducted to pilot test the preliminary questionnaire developed following the relevant literature. We argue that each of the SPMPs is positively associated with one or more of the SPIs. The following discussion focuses on the development of eight hypotheses about the association between the sustainability management practices and the sustainability management performance indicators identified in this paper.

*The association between environmental management practices (EMPs) and sustainability performance indicators*

Increased environmental awareness, particularly on the part of stakeholders, may lead organisations to focus more on improving their environmental performance management practices (EMPs). We define an organisation's EMPs to comprise activities such as greenhouse gas emission control, carbon trading, investing in pollution-free technology, quantified environmental targets and waste management. The extant literature suggests that an organisation's improved environmental performance may result in increased customer value performance, employee value performance, improved cost effective operation, and a better social responsibility image. Environmentally conscious customers are likely to be relatively happier with an organisation that is known to be operating (producing its products/services) in an environmentally friendly manner. With this image the organisation can retain its existing customers and acquire new customers that will result in a competitive advantage. Ferreira et

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<sup>1</sup> Given the very limited research carried out on organisational sustainability performance and organisational activities/practices that influence such performance, existing understanding of the practices and their impact on aspects (indicators) of sustainability performance is still in its infancy. Therefore, we consider that to conceptualise the variables of interest in this study solely on the basis of available literature could be incomplete or might lack relevance to practice. To overcome the potential problem we took two steps. First, we undertook an extensive search of the relevant literature to develop the preliminary questionnaire to assess each of the SPMPs and SPIs, and second, we personally interviewed senior executives of 20 organisations to gain a first-hand understanding of the elements that constitute such SPMPs and SPIs, and the potential relationships between particular SPMPs and SPIs.

al. (2010) and Hansen and Mowen (2005), for instance, argue that organisations that perform well in environmental management can avoid the costs of environmental damage, minimize capital cost, and create a positive brand image, thereby resulting in competitive advantage leading to increased market share and better financial performance. Empirical research suggests that EMPs are positively associated with triple bottom line reporting (Hyrsova and Hajek, 2006) and can result in improved financial performance (Klassen and McLaughlin, 1996; Adams, 2002; Staniskis and Stasiskiene, 2006). Burritt, et al., (2002) argue that improving organisations' EMPs should improve employee value performance through reduction of environmental accidents. In addition, IFAC (2005) observes that EMPs enjoy monetary rewards of improved environmental performance and improved social responsibility performance.

The preceding discussion suggests the following hypothesis:

Hypothesis 1. A company's environmental management practices are positively associated with its: (a) environmental performance, (b) social responsibility performance, (c) employee value performance, and (d) financial performance.

*The association between social responsibility practices (SRPs) and sustainability performance indicators*

For this study, we conceptualise an organisation's SRPs in terms of its activities related to community engagement, sponsorship, and donations. Social responsibility-related activities of an organisation create a positive image of the organisation, which in turn, leads to improved goodwill in the community. These activities are likely to promote the community's trust and confidence in the company's products and services, thereby creating a competitive advantage that results in sales growth and profitability. In other words, an organisation is likely to improve its financial performance by performing well in its social responsibility related performance management practices. Social responsibility practices may enable organisations

to avoid penalties and improve brand image, which ultimately results in improved financial performance (Roberts 1992; Adams 2002). Organisations committing themselves to corporate social responsibility activities can achieve long-term benefits through brand enhancement, goodwill, differentiation, increased employee motivation, higher profitability and quality workforce retention (CSR Europe, 2001; Lantos, 2002; Maignan and Ferrell, 2004).

Examples of benefits from adopting SRPs include recruitment and retention of talented employees (Adams, 2002; Bernhut, 2002), improvement in internal decision-making (Adams, 2002), process efficiency (King, 2002; Simms, 2002), improvement in corporate image and better relationships with stakeholders (Adams, 2002; Adams and Zutshi, 2004). These benefits could be viewed as elements of customer value and employee value performance. The adoption of corporate SRPs has been found to have a positive relationship with financial performance (e.g., Joyne, Payne, and Raiborn, 2002; Margolis and Walsh, 2003). Managers also have been found to believe that corporate SRPs help to improve long-run profitability and community quality of life; i.e., social responsibility performance (e.g., Ahmad, 2006).

Therefore, an organisation's improved social responsibility-related performance management practice is predicted to be associated with its improved social responsibility-performance, employee value performance, customer value performance, and financial performance. This suggests the following hypothesis:

Hypothesis 2: A company's *SRPs* are positively associated with its (a) social responsibility performance, (b) employee value performance, (c) customer value performance, and (d) financial performance.

*The association between internal process improvement practices (IPIPs) and sustainability performance indicators*

We conceptualise a company's IPIPs in terms of employee absenteeism, number of customer complaints, incidents of defective products or services, and employee health and safety. The

relevant literature indicates that an organisation's IPIPs are positively associated with various sustainability performances. For instance, positive links have been found between process innovation (improvement) and sustainable financial performance (Klomp and Van Leeuwen 2001; Ferraria and Parker, 2006). Ferreira et al (2010) also suggest that sustainable process innovation results in efficient and effective use of resources thereby conserving the environment and improving financial performance.

Perera, et al (1997) and Sim and Killough (1998) suggest that certain manufacturing strategies used for improving internal processes result in better environmental, customer, and financial performance. Examples of these manufacturing strategies are process quality improvement, process flexibility through automation using advanced manufacturing practices (AMP) and advanced manufacturing technology (AMT), which represent the effective use of information capital, reduced delivery time, and production cycle time.

The above discussion suggests the following hypothesis:

Hypothesis 3. A company's internal process improvement practices are positively associated with its (a) environmental performance, (b) employee value performance, (c) customer value performance, (d) information capital effectiveness performance, and (e) financial performance.

#### *The association between customer-focus practices (CFPs) and sustainability performance indicators*

A company's CFPs are defined in terms of getting new customers, retaining existing customers, maintaining customer profitability and improving employee effectiveness in providing customer services. In globally competitive markets, customers' tastes and preferences change quickly, and alternate suppliers may exist to meet such changing needs. In these situations, it is critical that an organisation meets its customers' needs and preferences so that it does not lose its' customers to competitors. In other words, a company's CFPs – related activities such as customer retention, acquisition, monitoring of customer profitability and

employee effectiveness in providing services to customers, are important. Retained customers are likely to be satisfied customers, who are relatively less price sensitive and much less expensive to service than new customers. Long-term satisfied customers' comments about the company's products and services may create a positive image in the market, resulting in increased sales, improved goodwill and ultimately higher profitability. Perera et al (1997) found positive associations between CFPs and both customer value and financial performance. Furthermore, Athey and Schmutzler (1995) suggest that when an organisation produces more practical and convenient products (as it focuses on customer needs and preferences) for customers, this will usually result in improved new product development performance.

The foregoing discussion suggests the following hypothesis:

Hypothesis 4. A company's customer focus practices are positively associated with its (a) customer value performance, (b) new product development performance, and (c) financial performance.

*The association between product innovation practices (PIPs) and sustainability performance indicators*

A company's sustainability management practices in product innovation (PIPs) comprise sales from new products, introduction of new products/services, time taken in introducing new products/services to market, delivery of order, production cycle time, and increase in market share. Organisations adopting PIPs are likely to achieve improved environmental and financial performance (e.g., Klomp and Van Leeuwen, 2001; IFAC, 2005; Ferraria and Parker, 2006; Ferreira et al., 2010). Athey and Schmutzler (1995) found a positive relationship between product flexibility, new enhanced quality products and cost reductions. Cost reductions may also be achieved through more efficient use of resources which in turn means improved environmental conservation and better financial performance. Hence, a positive association

between product innovation practices and both customer value performance and financial performance is expected, suggesting the following hypothesis:

Hypothesis 5. A company's product innovation practices are positively associated with its (a) environmental performance, (b) customer value performance, (c) new product development performance and (d) financial performance.

*The association between process and employee effectiveness practices (PEEPs) and sustainability performance indicators*

The available literature suggests that process and employee effectiveness practices (PEEPs) including recruitment and retention of talented employees will lead to improved internal decision-making, improved corporate image and better relationships with stakeholders, which leads to better environmental, employee value, customer value, and social responsibility performance (e.g., Joyne et. al, 2002; Margolis and Walsh, 2003). The sustainability performance management practices of process and employee effectiveness are necessary to improve organisations' prudent use of resources and minimize/eliminate environmental damage (Ferreira et al, 2010), resulting in enhanced financial and environmental performance.

The following hypothesis therefore is suggested:

Hypothesis 6. A company's process and employee effectiveness practice is positively associated with its (a) environmental performance, (b) employee value performance, (c) customer value performance, (d) social responsibility performance, and (e) financial performance.

*The association between profitability and cash flow improvement practices (PCFIP) and sustainability performance indicators*

Traditionally, management routinely monitors detailed information about the manufacturing costs of their company's products to improve cash flow, sales growth and profit. Unfortunately, in many cases, companies may show increased sales volumes but often have unhealthy cash flows due to poor account receivable collection processes and lower profits due to reduced profit margins.



The relevant literature proposes that organisations should undertake account analyses in relation to accounts receivable, accounts payable (Sheth and Sisodia, 1995) and inventory management (Horngren, et.al, 2011) as a means of improving sales growth, cash flow and profitability. A number of empirical studies (e.g. Van Raaij, 2005; Kuchta and Troska, 2007; Yan and Wang ,2010) report that product pricing and account analysis activities improve sales growth, cash flow and profitability, which in turn result in improved financial performance.

From the discussion above, it is postulated that profitability and cash flow practices improve a company's financial performance, which suggests the following hypothesis:

Hypothesis 7: A company's profitability and cash flow improvement practices have positive relationships with financial performance.

*The association between capital utilisation management practices (CUMP) and sustainability performance indicators*

Capital utilisation management practices should relate to activities that result from capital investment and accounting policies (such as depreciation method) that impact upon operational decisions. Therefore such activities should involve decisions about the utilisation of capital, cost of capital, and accounting for operating expenses. Executives generally use two financial measures that are impacted by the above mentioned decisions: return on investment (ROI) and economic value added (EVA). In relation to EVA, Johnson (2010) provides a framework to illustrate the impact of decisions about the cost of capital (e.g., interest), working capital ( e.g. receivables and payables), accounting policies relating to profit and loss items (e.g., decisions about purchasing of materials, depreciation methods, and asset valuations that affect expenses), and the employment of capital (e.g., purchase of fixed capital). Of course, there are other investment measures that could be included in capital utilization practices, but in this study we consider the most frequently used investment measures, ROI and EVA.

Theoretical arguments exist to support balancing sustainability performance management practices (SPMPs) of purchasing materials and capital equipment that not only impact upon financial performance but also environmental and social responsibility performance (Horngren, et.al. 2011). To date, there has been limited empirical evidence on the link between capital management practices and environmental, social responsibility and financial performance. Contemporary research suggests that pressures from various stakeholders (customers, suppliers, employees, communities, investors and lobby groups) may impact on practices that will have a positive association on corporate social responsibility practices (SRP) and financial performance (Mittal et al., 2008; McGuire et al., 1988). Finally, the use of capital management practices (with EVA as a valuation of this practice - see Ray, 2001) has a significant and positive association with the financial performance of firms (Rakshit, 2006).<sup>2</sup>

Hence, the following hypothesis is suggested:

Hypothesis 8: A company's capital utilisation management practices are positively associated with its (a) environmental performance, (b) social responsibility performance and (c) financial performance.

### **3. Method**

The preliminary survey questionnaire that included measurements for the identified variables of interest was developed and administered following best practice for survey design (e.g., Dillman, 2000; Gray and Guppy, 2008). The preliminary questionnaire was then pilot tested during our personal interviews with 20 senior executives (e.g., Chief Financial officers) of medium to large organisations as mentioned earlier in the paper. Using the feedback from the

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<sup>2</sup> We recognise that there is evidence in the contemporary literature that capital utilization is conceptualised as an outcome whereas corporate social responsibility practices (SRPs) are viewed as predictor variables. Given the focus of this study we explore the possibilities of conceptualizing corporate SRPs as performance indicators (SPIs) as argued by Horngren, et.al ( 2011) and capital utilization management practices (CUMPs) as predictor variables.

interviews we developed the final version of the questionnaire that was used for data collection.

The self-administrated questionnaire was mailed to Chief Financial Officers (CFOs) or Chief Executive Officers (CEOs) of 1,520 Australian companies with 250 or more employees as per Business Who's Who of Australia.<sup>3</sup> A cover letter describing the purpose of the study was accompanied by the questionnaire, a postcard and two reply paid envelopes. One reply paid envelope was for the respondent to return the postcard while the other was for the respondent to return the completed survey directly to the researchers.

The final survey questionnaire was designed in an attractive format (for ease of completion) by grouping the content in a logical manner to minimise time needed to complete the questionnaire as well ensuring respondents' anonymity (Dillman, 2000; Gray and Guppy, 2008). Additionally, the final survey questionnaire was mailed along with a postcard system for three reasons<sup>4</sup>. Firstly, the questionnaire could be completed in sections at convenient times, which provides a level of flexibility for managers with their busy workloads. Secondly, completion and return of the questionnaire indicated consent to participate, consistent with Human Research Ethics Committee guidelines. Thirdly, the postcard system allowed respondents to independently indicate that they had responded to the survey, while maintaining anonymity relating to their responses.

Three hundred and fourteen usable responses were received, which represents a response rate of about 21% from these companies. To address the issue of non-response bias, a series of t-tests were used to compare responses from the first 20% of (early) respondents with the

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<sup>3</sup> Prior management accounting studies have surveyed companies employing 200 or more employees (Hall, 2008). Business Who's Who of Australia is a Dunn and Bradstreet Web-based business directory. The 1,520 companies was the population of operating companies in Australia recorded by Dunn and Bradstreet Web-based business directory at the time of the study.

<sup>4</sup> The postcard was a small card identifying each company, which respondents could return separately so that participants could be excluded from any follow up activities.

responses from the final 20% of (late) respondents (as recommended by Oppenheim 1966). The t-tests yielded no significant difference for any of the variables of the study.

Demographic data collected included details about each organisation’s industry (with the proportion for each of the main industry types found to approximate the Australian population statistics for each industry’s contribution to GDP in 2008)<sup>5</sup> and number of employees as a proxy for organisational size<sup>6</sup>. Although the data were positively skewed, with the majority of companies employing less than 1,111 employees<sup>7</sup>, this positive skewness of the participants’ company size is consistent with the positive skewness in the database population used for this study as illustrated below.

<i>Number of Employees</i>	<i>Frequency</i>	<i>Percentage of Respondents</i>	<i>Percentage of Database Population</i>
<500	159	51.29%	41.60%
501-1000	74	23.87%	21.58%
>1000	77	24.84%	36.82%
	310	100.00%	100.00%

**Source: Derived from Business Who’s Who of Australia, Dunn and Bradstreet**

Specific details about each participant's gender showed that 78% of the respondents were males and 22% were females. This gender proportion reflects the Australian population statistics

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<sup>5</sup> The ABS 5204005\_gva\_by\_industry file is the source for this data.

<sup>6</sup> Measuring organisational size using the number of employees was chosen because employees constitute the critical factor in determining how well the strategic outcomes are achieved. Prior studies examining the effects of management control system factors on organisation performance have used ‘number of employees’ to determine organisational size (see Guthrie, 2001; Chenhall, 2003).

<sup>7</sup> To test for the effect of skewness in company size within the sample, we analysed the data using company size as a dummy variable representing small and large using the median number of employees as the cut off point. We also analysed the data categorising the company’s size into small (<500 employees), medium (501-1000 employees), and large (more than 100 employees). The results are reported and discussed in the discussion and conclusion section. Note, that as the skewness relates to size only, and is found to be of the same magnitude as the entire population, it does not affect the validity of the other separate variables which did not exhibit any skewness. Four respondents did not provide the number of employees and these cases were excluded from the statistical information above.

concerning reported percentage of women employed as professionals in recent years.<sup>8</sup> Finally, on average, 72% of the respondents were degree qualified, which included both undergraduate as well as postgraduate qualifications. The other 28% of the respondents had either another form of tertiary educational qualification, e.g., TAFE, or a non-tertiary educational qualification, such as a professional or industry-based qualification.

### ***Variable measures***

Items used in the survey to measure the variables of interest in this study were adopted from extant literature and later modified using the feedback from executives during the pilot study. Forty SPMP items were used to gather information from participants about their organisations' level of use of practices currently used to manage the interests of their various stakeholders (including shareholders, customers, suppliers, creditors, employees, and community). These items were adopted from prior empirical studies (Iselin, Mia and Sands, 2008) and normative frameworks proposed by leading scholars in SPMSs (Kaplan and Norton, 1996; Hansen and Mowen, 2005). Similarly, 36 SPI items were adopted from prior empirical studies (Govindarajan and Fisher, 1990; Hoque and James, 2000; Iselin, Mia and Sands, 2010) and leading scholars in SPMSs (Horngren et al., 2011) to capture information relating to the sustainable performance of organisations. Some of these SPMP and SPI items were adapted using the feedback from executives in the pilot study to reflect current trends in practice.

Managers were asked to indicate the level of usage of 36 items that were components of SPMPs. The same managers were then asked to designate their perceptions about how well

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<sup>8</sup> *Women in Australia 2007*, the most recent report identified in our web search conducted <http://www.fahcsia.gov.au/sa/women/pubs/general/womeninaustralia/2007/Pages/part4.aspx#1a>, confirmed that 22.6% of women were employed as professionals. Additionally, the *Women in Australia 2007* report (using the *Australian Labour Statistics, January 2007, ABS Cat. No. 6105.0, Table 2.4*) showed that about 26.5% of women were employed as *managers and administrators*. As the participants of this study would more likely be professionally qualified and not administrators, the response proportion from females for this study appears representative of women professionally qualified and employed as either CEO or CFO.

their organisation performed compared to their industry's average for 33 items related to organisational SPIs. To achieve parsimony, the responses to both SPMP and SPI items were then factor analysed using principal components analysis involving varimax rotation. The use of the scree test with a cut off point of 1.5 for eigen values, and recognising factor loadings greater than 44 percent<sup>9</sup> resulted in eight SPMP factors (with a combined explanatory power of 67.53%) and seven SPI factors (with a combined explanatory power of 64.86%). The full rotated matrices, together with loadings and reliability statistics are displayed in Appendices 1 and 2; which also show that the Cronbach alpha for the factors were acceptable at a level of .65 or above<sup>10</sup>. The factor analysis produced significant statistics for the eight SPMP factors (*KMO* = .899; Bartlett's Test *sig* = .000) and the seven SPI factors. (*KMO* = .885; Bartlett's Test *sig* = .000).

#### 4. Results

We performed a confirmatory factor analysis (CFA) to establish the validity and reliability of the measures, where each measurement item was restricted to load on its relevant factor. The full results of this analysis, together with the correlation matrix for all the SPMP and SPI constructs are displayed in Appendix 3. These results reveal that there is strong discriminant validity for these constructs and no evidence of multicollinearity among the constructs.

To test the associations between various SPMPs and SPIs that are postulated in section 2 of the paper, six multiple and one single regression analyses were conducted by running separate

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<sup>9</sup> Factor loadings of 44% were considered to be an appropriate cut-off point as the next highest factor loadings were at 40%, thus indicating a natural break in the factor loadings and reducing the possibility of significant cross loadings (Hair, Andersen, Tatham and Black 1998).

<sup>10</sup> According to Robinson, Shaver, and Wrightsman (1991) an alpha value of 0.80 or higher is considered as exemplary; values between 0.70 and 0.79 are considered as extensive; values between 0.60 and 0.69 as moderate, and values less than 0.60 as minimal. Based on these categories, strong evidence of reliability is noted in the constructs of the factors.

regressions for a varying number of SPMPs against each of the SPIs. Significant *results* were obtained for all 7 regression analyses, are shown in Table 1. The regression analyses were conducted using two control variables. These were industry type and organisational size. Industry type was captured by grouping organisations into two categories: manufacturing and non-manufacturing. Organisational size was measured by using the number of employees. The organisations were categorised into small (500 or less employees) and large (more than 500 employees), which was the median number of employees.

The practices may differ depending upon the size of the organisation and the industry in which it operates. Large, compared to small, organisations are more likely to have resources needed to adopt comprehensive or sophisticated management practices (Abdel-Kader and Luther, 2008; Mia and Winata, 2008; Otley, 1995). Similarly, we argue that industry type, due to different characteristics of different industry, is likely to affect organisational controls such as performance management (Bangchokdee, 2008). Following the literature, we tested the hypotheses controlling for the industry type and size of the participant companies in the study.

The results reported in Table 1 provide support for the postulated positive associations between the 8 SPMPs and 7 SPIs, after controlling for industry and size effects. It can be seen from the results that the eight sustainability performance management practices (SPMPs) can be classified into three categories with respect to their relative importance in terms of their impact on the number of individual sustainability performance indicators (SPIs). Following this categorisation, we find that social responsibility practices (SRPs), constitute the first or the most important category of SPMPs as this is positively and significantly associated with three sustainability performance outcomes [employee value performance (EVP), social responsibility performance (SRP), and financial performance (FP)]. There are three SPMPs that comprise the second category of SPMPs. Each of these three SPMPs [Product innovation practices (PIPs), Process and employee effectiveness practices (PEEPs) and Capital utilisation management

practices (CUMPs)] is associated significantly with two SPIs. Results in Table 1 also show that new product development performance (NPDP) and financial performance (FP) are associated significantly and positively with PIPs; employee value performance (EVP) and customer value performance (CVPs) are positively and significantly associated with PEEPs; and SRP and FP are significantly and positively associated with CUMPs. Four SPMPs in Table 1 constitute the third category of SPMPs as they each are found to have only a significant and positive association with one SPI.<sup>11</sup>

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<sup>11</sup> Environmental management practices (EMPs) are associated with environmental performance (EP), internal process improvement practices (IPIPs) are associated with information capital performance (ICP), Customer focus practices (CFPs) are associated with customer value performance (CVPs), and an association is found between profitability and cash flow improvement practices (PCFIPs) and financial performance (FP).



**Table 1: Relationship between Organisational Sustainability Management Practices and Organisational Sustainability Performance**

Independent Variables: Sustainability Performance Management Practices (SPMPs) and Control Variables	Dependent Variables: Organisational sustainability performance Indicators (SPIs)									
	Environmental Performance EP	Employee Value Performance EVP	Customer Value Performance CVP	New Product Development Performance NPDP	Social Responsibility Performance SRP	Financial Performance FP	Information Capital Performance ICP			
	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$			
1. Environmental management practices (EMPs)	.768***	.015			-.001	-.086				
2. Social responsibility practices (SRPs)		.169***	-.036		.812***	.124**				
3. Internal process improvement practices (IPIPs)	.076	-.051	.028			-.028	.439***			
4. Customer focus practices (CFPs)			.264***	-.026		-.050				
5. Product innovation practices (PIPs)	.004	-.062	.101	.839***		.155**				
6. Process and employee effectiveness practices (PEEPs)	.011	.553***	.132*		-.025	.095				
7. Profitability and cash flow improvement practices (PCFIPs)						.380***				
8. Capital Utilisation Management Practice (CUMPs)	.018				.108***	.127**				
Industry (Manufacturing Service-Retail)	.044	.088	-.042	.037	.010	-.006	-.057			
Firm Size	-.002	-.035	-.051	-.008	-.028	.123#	.029			
<i>Adjusted R Square</i>	.660	.336	.156	.695	.678	.315	.191			
<i>ANOVAs</i>										
<i>F</i>	85.566	23.022	9.065	173.903	108.912	14.912	24.970			
<i>Sig</i>	.000	.000	.000	.000	.000	.000	.000			

\*  $sig < 0.1$ ; \*\*  $sig < 0.05$ ; \*\*\*  $sig < 0.01$

# A separate regression using small, medium and large categories shows only a significant effect for Large Companies ( $\beta = 1.19^{**}$ ), which are discussed in the Discussion and Conclusion section of this paper.

## 5. Discussion and Conclusion

There are a number of issues that need to be discussed based on the findings in Table 1. From an environmental and social responsibility perspective, there are two significant positive associations in the result for this study. Firstly, the significant association found between the use of sustainability management practices (EMPs) and environmental performance (EP). The association is between an organisation's environmental management practices and its environmental performance relative to its industry competitors. The second significant association is between social responsibility practices (SRPs) and three performance outcomes [employee value performance (EVP), social responsibility performance (SRP), and financial performance (FP)]. The association between SRPs and SRP suggests that managers believe that to achieve good social responsibility outcomes they will need to focus on meeting social responsibility obligations for a wider group of stakeholders. For example, the social responsibility obligations owed to employees may include providing a safer work environment over and above mandatory WHS requirements; while the social responsibility obligations owed to the community might refer to minimising emissions from factories over and above those required to be minimised by the National Pollutants Inventory (NPI) requirements. Our results support the findings of Orlitzky et al (2003) who argue that an organisation's virtue in the form of social responsibility is beneficial to the organisation. The significant and positive association found between SRPs and EVP, may enable an organisation focusing on social responsibility to be capable of attaining improved employee value performance, which is consistent with the findings of Burney, Henley and Widener (2009).

The significant association identified by the result for environmental management practices (EMPs) and social responsibility practices (SRPs) suggests that organisations that run their business in an environmentally friendly and socially responsible manner should achieve a (i) relatively better performance on environmental and social responsibility issues, (ii)

performance that employees value, and (iii) a relatively better financial performance. In other words, by adopting these environmental management practices (EMPs) and social responsibility practices (SRPs), an organisation can portray itself as an environmentally and socially responsible organisation; as organisations that are perceived as environmentally friendly and socially responsible enjoy favourable social perceptions and financial benefits (Fisher, 2010; Spitzer, 2010).

Table 1 shows that new product development performance (NPDP) and financial performance (FP) have a significant association with practices related to introducing innovative products. That is, there appears to be some link between managers' focus on new product introductions and their organisation's successful introduction of innovative products and financial performance. These findings are consistent with Firth and Narayanan (1996) who found that innovation is a means for firms achieving higher returns. These two performance outcomes associated with innovative product practices appear to be consistent with special dynamic properties in the SPMS suggested by Henry (2006).

Profitability and cash flow improvement practices (PCFIPs) contribution to an organisation's financial performance (FP) are reflected in the results in Table 1 as the association is significant, which support Van Raaij, 2005; Kuchta and Troska, 2007; and Yan and Wang, 2010. There are significant positive associations between capital utilisation management practices (CUMPs) and SRPs as well as CUMPs and FP according to the results in Table 1. This is consistent with Farsio et al (2000) who argue that practices that focus on components of EVA helps a firm increase its profitability by clearly specifying the financial objective of the firm and by emphasising continuous improvement in measuring financial returns.

The results (Table 1) reveal that an organisation's customer focus practices (CFPs) to enhance customer satisfaction are positively associated with customer value performance (CVP). This

implies that if managers observe and respond to their customers needs, this will result in the organisation achieving performance that is valued by customers. This finding is consistent with the suggested role of SPMS to provide a closer understanding of customer needs to create a perceived value for customers (e.g., Bourne, Kennerley and Franco-Santos, 2005; Neely, Gregory, and Platts, 2005).

Finally, the results show that there is a significant association between internal processes improvement practices (IPIPs) and an organisation's performance in effectively using its information capital (ICPs). This suggests that the extent of managers' focus on employees and the use of streamlined processes may influence the extent to which information capital provides positive outcomes.

In conclusion, FP is shown in Table 1 to have significant positive associations with four sustainability management practices, namely PIPs, SRPs, CUMPs, and PCFIPs. These practices represent various stakeholders' interests and their association with the financial performance outcomes may be viewed as some support for the integrated view of these practices into a balanced scorecard performance measurement system as illustrated by Buytendijk and O'Rourke (2008). These results are consistent with the concept that focussing on strategic performance measures, facilitates achievement of the related performance management practices (Kennerley and Neely, 2003; Kaplan and Norton 2004; Lohman, Fortuin, and Wouters, 2004; Henry, 2006).

The results show no significant effect of industry type on any of the seven SPIs and no significant effect of size of the participant companies on six of the seven SPIs. Financial performance recorded a significant effect for company size. A separate regression using small, medium and large categories of size shows significant effect only for large companies ( $\beta = 119$ ,  $sig < 0.05$ ). We argue that firm size is an important factor that has been reported in

previous relevant studies to impact on organisational controls such as performance management. Large, compared to small, organisations are more likely to have resources needed to adopt comprehensive or sophisticated performance management practices (Abdel-Kader and Luther, 2008; Otley, 1995). Following the literature, we tested the hypotheses controlling for the industry type and size of the participant companies in the study.

Our results reveal that each of the sustainability performance management practices (SPMPs) identified is positively associated with one or more of the of the sustainability performance indicators (SPIs). Therefore, the results either fully or partly support each of the eight hypotheses we developed in the paper (Figure 1). Based on the results, we conclude that by focussing on the sustainability performance management practices, an organisation can facilitate its achievement of sustainability performance management practices identified in this study (see also, Kennerley and Neely, 2003; Kaplan and Norton 2004; Lohman, Fortuin and Wouters, 2004; Henry, 2006). More specifically, the current study shows that an organisational focus on SPMPs yields positive and significant results for corporate sustainability performance (including the traditional performance outcomes). The findings show that environmental performance (EP), new product development performance (NPDP) and information capital performance (ICP) are associated with a single sustainability performance practice (SPMP) while the other four performance outcomes (employee value performance (EVP), social responsibility performance (SRP), and financial performance (FP)) are associated with multiple practices. In addition, the results show internal process improvement practices were associated with information capital performance. This finding is consistent with the notion that organisations which have a strategic focus on understanding their employees will achieve enhanced information capital performance (e.g. Kaplan and Norton 2004). Overall, the results reveal that adoption of each of the eight sustainability

management practices is important for an organisation to achieve its comprehensive corporate sustainability performance outcomes.

Our results suggest that the associations between the sustainability performance management practices (SPMPs) and sustainability performance indicators reflect two complementary views of implementing SPMPs as suggested by Pinheiro de Lima, Gouvea da Costa and Angelis (2008). Firstly, some findings of this study show a focus by organisations on the competitive perspective such as customer value, new product development, and financial performance outcomes, which constitutes a market approach. Secondly, organisations' focus on environmental performance, employee value performance, social responsibility performance and information capital performance reflect medium- to long-term orientations that focus on the pursuit of developing outcomes related to core capabilities, that constitutes a resource-based approach (Pinheiro de Lima, Gouvea da Costa and Angelis, 2008).

This study contributes to both theory and practice for organisational sustainability. It makes a contribution to theory by proposing the model (Figure 1) that includes eight predictor variables (SPMPs) and seven outcome variables (i.e., sustainability performance indicators (SPIs)). The study empirically tests the model through statistically testing the posited relationships between the predictor and outcome variables. The statistically significant results reveal that each of the predictor variables (SPMPs) is important for enhancing organisational sustainability performance. In other words, the results suggest that organisations ought to focus on all of the eight SPMPs in the model to enhance their comprehensive sustainable performance. This indicates that the proposed model is a step forward in better understanding of the concept and management of organisational sustainability. Future research will benefit from testing the model in different contexts (e.g., market conditions, ownership structure, leadership style, culture).

In relation to practice, the study contributes to a better understanding of the management of organisations' sustainability initiatives/actions by identifying the relative importance of the eight SPMPs in the model. The results reveal that the SPMPs can be classified into three categories in order of their respective significant associations with sustainability performance outcomes. The most important category contains social responsibility practices (SRP). The results reveal that an organisation's SRP positively influences three SPIs (Employee Value Performance, social responsibility performance, and financial performance). The second most important category contains three SPMPs [product innovation practices (PIPs), process and employee effectiveness practices (PEEPs), and capital utilisation management practices (CUMPs)]. An organisation's PIPs are positively associated with two SPIs [New Product Development Performance (NPDP) and financial performance (FP)]. Similarly, PEEPs are positively associated with Employee Value Performance (EVP) and Customer Value Performance (CVP) while CUMPs have a positive association with SRPs and FP. Finally, the other four SPMPs constitute the third category in which each SPMP is positively associated with one SPI. These results should prove to be helpful to managers for prioritising their organisation's plan, in determining the SPMPs that should be initiated first in case the organisation has resource constraints, rather than attempting to initiate all of the eight SPMPs at the same time. Also, such findings may assist organisations, (particularly those with resource limitations) in prioritising their focus on these SPMPs for their sustainability performance, and encourage more organisations in Australia and overseas to adopt the SPMPs either simultaneously or by categories (as explained above) to enhance their sustainability performance.

## **6. Limitations and Further Research**

It must be acknowledged that although the sample includes the total population of Australian businesses, it could only be regarded as representative of Australian companies in the

manufacturing, service and retail industries, therefore, the results are limited to these industries. Moreover, the total sample size of 314 businesses may limit the generalisability of these results to a wider population of businesses. This is particularly important in that the response rate was only 21 per cent, from which it is difficult to make a general inference about the population, as the sustainability performance management practices of the non-respondents are unknown. Therefore, further research is required to ascertain whether the same practices are evident across organisations of different sizes and industry groups within a broader sampling frame. This study was also restricted to only eight of the sustainability performance management practices (SPMPs). Future research may investigate the perceived importance of other sustainability performance management practices. Also, this study may be extended in future research by incorporating other sustainability performance management practices with the intention of further investigating our preliminary hypotheses that may lead to an even better understanding of how to improve organisational sustainability performance. The matching of the organisation's business strategic priorities with its sustainability performance management practices may also be further investigated to identify the impact of strategic priorities on organisational performance. Finally, in this study, organisational performance was operationalised by respondents' self-reported measures of items such as customer satisfaction, employee satisfaction, sales from new products, profit from operations, and environmental outcomes. Further research may investigate alternative subjective measures of organisational performance such as different benchmarking standards of comparative performance, and different alternative objective measures, such as, profit margins and sales growth.



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**Appendix 1: Sustainability Management Practices Rotated Component Matrix**

	Sustainability Management Practice							
	EMP	CFP	PIP	PEEP	IPIP	SRP	PCFIP	CUMP
Greenhouse gas emissions	.856							
Carbon trading	.816							
Use of quantified environmental targets	.796							
Investment in pollution-free technology	.789							
Other environmental management systems	.787							
Water conservation	.777							
Waste management	.676							
Disclose of CSR/TBL information	.491							
Customer acquisition		.819						
Customer retention		.791						
Customer profitability		.657						
Employee productivity		.498						
Percent sales from new product /service			.841					
New products/service introduction			.800					
Time to market with new product/service			.789					
Length of cycle time from order to delivery			.569					
Increase in market share			.501					
Dollars spent for employee develop & training				.646				
Information system capability				.606				
Retention of trained employees				.572				
Use of e-commerce				.535				
Online information flow systems				.527				
Spending dollars for new or improved process				.446				
Reducing employee absenteeism					.735			
Reducing number of customer complaints					.731			
Incidents of defective products or services					.527			
No of incidents in relation to employee health and safety					.453			
Community engagement/sponsorship						.817		
Donations to community						.734		
Improved cash flow from operations							.826	
Improve Profit before tax from operations							.756	
Sales growth							.478	
Return of investment (ROI) focused								.804
Economic Value Added (EVA) focused								.574
Cronbach's Alpha	.917	.819	.853	.813	.700	.840	.650	.650

EMP = Environmental Management Practices; CFP = Customer Focus Practices; PIP = Product Innovation Practices; PEEP = Process and Employee Effectiveness Practices; IPIP = Internal Process Improvement Practice; SRP = Social Responsibility Practices; PCFIP = Profitability and Cash Flow Improvement Practices; CUMP= Capital Utilisation Management Practices.

## Appendix 2: Sustainability Management Performance Indicators Rotated Component Matrix

	Sustainability Management Performance						
	EP	NPDP	EVP	FP	ICEP	CVP	SRP
Budget for greenhouse gas emissions	.879						
Budget for water conservation	.833						
Budget for carbon trading	.820						
Investment in pollution-free technology	.775						
Budget for waste management	.695						
Percentage of sales from new products		.826					
Time to market (make available to public) new products		.793					
Number of successful new product introduced		.781					
Decrease in percentage of sales returns		.642					
Development of markets for new and existing products		.548					
Percent of market share		.531					
Research and development		.498					
Employee training and development			.696				
Workplace relations			.645				
Trained employee retention			.638				
Employee health and safety			.629				
Employee satisfaction			.628				
Profit before tax from operations				.858			
Cash flow from operations				.795			
Return of investment (ROI)				.527			
Sales growth				.458			
Effective use of information technology/ecommerce					.819		
Investment in information technology/ecommerce					.677		
Disclosure of online information (CSR/TBL)					.562		
Speed of collection rate for sales /fees					.547		
Customer satisfaction with product/service delivery process						.822	
Level of product quality						.735	
Budget for community engagement/sponsorship							.680
Budget for donations to community							.648
Cronbach's Alpha	.905	.864	.789	.708	.725	.795	.850



EP = Environmental Performance; NPDP = New Product Development Performance; EVP = Employee Value Performance; FP = Financial Performance; ICEP = Information Capital Effective Performance; CVP = Customer Value Performance; SRP = Social Responsibility Performance

### **Appendix 3: Validation of measures**

We performed a confirmatory factor analysis (CFA) to establish the validity and reliability of the measures, where each measurement item was restricted to load on its relevant factor. As displayed in Tables A3.1 and 3.2, all items had loadings  $>.60$  on their expected constructs, demonstrating some degree of convergent validity (see Hair, Black, Babin, Anderson, and Tatham, 2006). The factor loadings and model fit indices (GFI=0.979, CFI = .980, RMSEA=0.06), showed that our model is a reasonable but imperfect fit of the data and this is most likely due to the small sample size (see Browne and Cudeck, 1993). Composite reliabilities were then calculated to establish the construct validity of the measures (Hair, Black, Babin, Anderson, and Tatham, 2006). As reported in Tables A3.1 and A3.2, each of the composite reliabilities exceeded the level of 0.80. According to Hair et al (2006:778) a reliability estimate that is .7 or higher suggests good reliability.

Table A3.3 presents the correlation matrix for all the factors that are included in the constructs. Although there are three correlations above .8, since these are below the threshold of .90, there is no problem with multicollinearity between the factors (see Hair et al 2006:227).

A variance extraction test was then used to determine the discriminant validity of the measures (Fornell and Larcker, 1981; Hair, Black, Babin, Anderson, and Tatham, 2006), where the average variance extracted assesses the amount of variance captured by the construct's measures relative to measurement error and the correlations among the latent constructs in the model. As shown in Tables A3.1 and A3.2, all of our construct measures achieved the minimum criterion of 0.50 or higher for average variance extracted which indicates validity for a construct's measure. The variance-

extracted estimates for each pair of constructs were then compared with the square of the correlations between each pair of the constructs. Table A3.3 shows the correlations between the constructs, and it is evident that when these correlations are squared they are lower than all variance-extracted estimates for each pair of constructs (as shown in Tables A3.1 and A3.2). Thus each of the latent constructs would appear to be explaining its item measures better than it explains another construct, and this would indicate good evidence of discriminant validity (Hair, Black, Babin, Anderson, and Tatham, 2006: 773,777).

**Table A 3.1 Confirmatory Factor Analysis SM Practices**

Construct	CR	AVE	Item	SFL
Environmental management practices (EMPs)	.93	.64	Greenhouse gas emissions	.88
			Water conservation	.84
			Carbon trading	.83
			Investment in pollution-free technology	.83
			Use of quantified environmental targets	.81
			Other environmental management systems	.80
			Waste management	.76
			Disclose of CSR/TBL information	.62
Customer focus practices (CFPs)	.88	.66	Customer acquisition	.89
			Customer retention	.89
			Customer profitability	.79
			Employee productivity	.65
Product innovation practices (PIPs)	.90	.64	Percent sales from new product /service	.88
			New products/service introduction	.86
			Time to market with new product/service	.84
			Length of cycle time from order to delivery	.71
			Increase in market share	.67
Process and employee effectiveness practices (PEEPs)	.87	.52	Information system capability	.78
			Dollars spent for employee develop & train	.74
			Online information flow systems	.73
			Use of e-commerce	.72
			Spending dollars for new/improved process	.69
			Retention of trained employees	.66
Internal process improvement practices (IPIPs)	.82	.53	Reducing employee absenteeism	.79
			Reducing number of customer complaints	.77
			Incidents of defective products or services	.69
			No of incidents: employee health & safety	.65
Social responsibility practices (SRPs)	.93	.86	Community engagement/sponsorship	.93
			Donations to community	.93
Profitability and cash flow improvement practices (PCFIPs)	.82	.60	Improved cash flow from operations	.81
			Improve Profit before tax from operations	.81
			Sales growth	.70
Capital Utilisation Management Practice (CUMPs)	.85	.74	Return of investment (ROI) focused	.86
			Economic Value Added (EVA) focused	.86

CR = Composite reliability as determined by  $(\sum SFL)^2 / (\sum SFL)^2 + \sum e$  (see Fornell & Larcker, 1981)

AVE= Average Variance Extracted

SFL = Standardised factor loading

**Table A 3.2 Confirmatory Factor Analysis SM Performance**

Construct	CR	AVE	Item	SFL
Environmental Performance (EP)	.93	.72	Budget for greenhouse gas emissions	.92
			Budget for water conservation	.88
			Budget for carbon trading	.85
			Investment in pollution-free technology	.82
			Budget for waste management	.78
New Product Development. Performance (NPDP)	.90	.57	Percentage of sales from new products	.85
			Number of successful new product introduced	.85
			Time to market for new products	.83
			Decrease in percentage of sales returns	.70
			Dev. of markets for new/existing products	.69
			Research and development	.66
Employee Value Performance (EVP)	.86	.54	Employee training and development	.78
			Workplace relations	.77
			Employee health and safety	.73
			Employee satisfaction	.73
			Trained employee retention	.67
Financial Performance (FP)	.83	.55	Profit before tax from operations	.84
			Cash flow from operations	.76
			Return of investment (ROI)	.69
			Sales growth	.65
Information Capital Performance (ICP)	.84	.57	Effective use of IT/ecommerce	.84
			Investment in IT/ecommerce	.80
			Disclosure of online information (CSR/TBL)	.74
			Speed of collection rate for sales /fees	.61
Customer Value Performance (CVP)	.91	.83	Customer satis. with product/service delivery process	.91
			Level of product quality	.91
Social Responsibility Performance (SRP)	.93	.86	Budget for community engagement/sponsorship	.93
			Budget for donations to community	.93

CR = Composite reliability as determined by  $(\sum SFL)^2 / (\sum SFL)^2 + \sum e$  (see Fornell & Larcker, 1981)

AVE= Average Variance Extracted

SFL = Standardised factor loading

**Table A3.3: Correlations between Organisational Sustainability Management Practices and Organisational Sustainability Performance**

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Environmental management practices (EMPs)	.43	.41	1												
2. Social responsibility practices (SRPs)	.32	.35	.48	1											
3. Internal process improvement practices (IPIPs)	.46	.38	.51	.43	1										
4. Customer focus practices (CFPs)	.47	.47	.66	.50	.55	1									
5. Product innovation practices (PIPs)	.23	.22	.38	.40	.38	.36	1								
6. Process and employee effectiveness practices (PEEPs)	.47	.23	.40	.24	.45	.43	.30	1							
7. Profitability and cash flow improvement practices	.82	.40	.33	.29	.42	.43	.19	.42	1						
8. Capital Utilisation Management Practice (CUMPs)	.43	.31	.43	.33	.83	.49	.28	.40	.51	1					
9. Environmental Performance (EP)	.29	.39	.35	.44	.30	.56	.22	.23	.38	.44	1				
10. New Product Development. Performance (NPDP)	.21	.29	.31	.25	.39	.35	.49	.31	.28	.44	.38	1			
11. Employee Value Performance (EVP)	.34	.30	.44	.28	.40	.69	.20	.27	.44	.49	.55	.34	1		
12. Financial Performance (FP)	.16	.16	.27	.37	.29	.32	.14	.18	.24	.39	.51	.33	.41	1	
13. Information Capital Performance (ICP)	.38	.82	.35	.24	.32	.40	.14	.27	.49	.34	.49	.34	.39	.26	1
14. Customer Value Performance (CVP)															
15. Social Responsibility Performance (SRP)															

all significant at  $p < .05$